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Air Repair

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AIR POLLUTION AND SMOKE PREVENTION ASSOCIATION OF AMERICA
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Air Repair

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A QUARTERLY MAGAZINE DEVOTED TO AIR PURIFICATION

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OUR HOME AT MELLON INSTITUTE

Vast Scientific Resources and Know-How Available to Our Association Through Connection with Outstanding Research Institution

The crowd queued up in orderly fashion, waiting for the doors to open. It was September 15, 1951, in the heart of Oakland, the Pittsburgh district known for its many cultural and recreational facilities.

But the crowd wasn't standing before Syria Mosque or Carnegie Music Hall. It wasn't at the Pittsburgh Playhouse or at the Pitt Stadium. It wasn't at Soldiers' Memorial or Forbes Field.

It was at Mellon Institute!

Science brought out the crowd that patiently stood in line on this and the following memorable day. The imposing building, one of the most beautiful in the world, was having its first Open House since its completion in 1937, and thousands of Pittsburghers, from corporation presidents to cops on the beat, came to see the wonders on display.

Pittsburgh is proud of its position in commerce and industry. It is proud to be known as the Workshop of the World, and of the hundreds of industries which sprang up at the place where the Allegheny and Monogahela Rivers meet to form the Ohio.

City of Research

These industries, however, could not have reached their present eminence without constantly improving their products. To do so, they employed research personnel, either by setting up laboratories in their own companies, or else by engaging outside scientists to study their products and to suggest ways in which either the products or the methods of manufacture could be improved.

Pittsburgh accordingly not only became a great manufacturing center over the past 75 years, it also became a center of science. Many company laboratories are located in its environs, such as those of Westinghouse, Gulf, Alcoa, U. S. Steel, and Mine Safety Appliances.

Then there are separately operated scientific activities, of which Mellon Institute is the largest. And it is of the Institute we want you to know more, for our Executive Offices are located in this building. We are thus intimately associated not only with the personnel making up the Institute, but also, through acquaintance, with executives of other laboratories in the district.

An excellent description of the Institute, with appropriate photographs, is contained in the reprint from the August, 1951 issue of *Instruments*, which is separately enclosed with your copy of this issue.

Just a few of the 27,000 persons who visited the Institute during its September Open House. The line stretched from the building entrance to the corner of Fifth and Bellefield Avenues (foreground), and all the way back to Forbes Street, three city blocks away (background). Note line on cover photo.

The 15th annual meeting of Industrial Hygiene Foundation, held in the auditorium of Mellon Institute. These informative meetings attract a great deal of attention nationally, with more than 500 persons registering for the two-day sessions. The 1951 meeting will convene on November 15.

Industrial Hygiene Foundation

Page after page, of course, could be written about the amazing institution in which our Secretariat is housed. The Institute is also the home of Industrial Hygiene Foundation, with whose aims and personnel so many members of our Association are already familiar.

As a matter of fact, the two organizations have been working closely together on various air pollution control problems. A national committee was formed by the Foundation last year to further these studies. Most of its members are also members of APCSPAA.

This committee consists of A. D. Bailey, Vice President, Commonwealth Edison Company, Chicago; W. F. Davidson, Research Engineer, Consolidated Edison Company, New York; Henry F. Hebley, Research Consultant, Pittsburgh Consolidation Coal Company, Pittsburgh; Dr. George R. Hill, Consultant, American Smelting & Refining Company, Salt Lake City; Dr. Raymond Hussey, Scientific Director, Council on Industrial Health, American Medical Association, Chicago; and Dr. L. C. McCabe, Chief, Division of Fuels and Explosives, U. S. Bureau of Mines, Washington.

Prominent industrial hygienists in the Foundation include its Managing Director, Dr. C. Richard Walmer, who was invited to address an international industrial health congress in Lisbon, Portugal, last month; W. C. L. Hemeon, Director of Engineering, who addressed our Roanoke meeting last May on the progress of atmospheric measuring instruments; Dr. H. H. Schrenk, Director of Research, who, when in the U. S. Public Health Service, was one of the key investigators of the Donora disaster; and Theodore F. Hatch, Director of the Laboratory. Mr. Hatch was one of the two United States delegates sent to the International Congress on Pneumoconiosis in Sydney, Australia, a year ago.

Under an agreement with the American Iron & Steel Institute, the Foundation has been engaged in a study of air pollution. The research has included studies on the chemistry of sulfur dioxide oxidation, the development of low-cost instruments for the measurement of air pollution intensity at ground level, and a project on the kinetic behavior of particulate matter in stack gases in relation to the problem of measuring dust in such gases that will ultimately embrace the performance of dust —and fume—collection equipment.

Canadian Visitors

October visitors to the Secretariat included a delegation from Canada consisting of R. Marcel Lafaille, City Councillor, Smoke Control Division, City Hall, Montreal, Canada; Bernard Beaupre, Smoke Control Division, City Planning Department, Montreal; Owen R. Barefoot, Motive Power and Car Department, Canadian Pacific Railway, Toronto; and L. S. MacGregor, Mechanical Engineer, Canadian National Railroad, Toronto, Canada.

Crowds gathered before the APCSPAA exhibit during the two-day visit. Air pollution control officials of many cities, asked to submit photographs for the exhibit, cooperated splendidly.

Pittsburgh Cuts Amount of Legal Fly Ash in Air

Pittsburgh City Council recently reduced the legal amount of floating fly ash drastically.

However, the revised ordinance will cause no hardship because most firms who might be classed as possible offenders are already well within the range of the amended ordinance.

Dr. Sumner B. Ely, Superintendent of the Bureau of Smoke Prevention, asked to reduce the legal quantity of fly ash—formerly fixed at .75 grains per cubic foot of flue gas at a stack temperature of 500 deg. F.—to .30 grains. This corresponds closely to the .85 lb. of solids per 1,000 lb. of flue gas at 50 per cent of excess air recommended in the A.S.M.E. model smoke ordinance.

The announcement was not new to many of Pittsburgh's industries, since the proposed estimate was printed several years ago in copies of the anti-smoke ordinance. This acted as a warning that the legal limit of fly ash would be reduced, giving companies a chance to prepare for the coming restriction when they installed new equipment.

To show how Pittsburgh industry cooperated, Dr. Ely cited the case of the Allegheny County Steam Heating Company, a subsidiary of the Duquesne Light Company, which supplies many downtown buildings with heat.

A pair of electric precipitators was installed, one in the fall of 1949, the other a year later, at a cost of $450,000.

"The emission of fly ash from this downtown stack is now so small," Dr. Ely said, "that the air above the stack is now absolutely clear nearly all the time. The amount of fly ash is close to zero. The company got no return from the installation. It was a civic contribution."

Bureau of Minds to Meet

Dr. Hamnett P. Munger, of Battelle Memorial Institute and Chairman of the Air Pollution and Smoke Prevention Association's Technical Committee, has scheduled a meeting for the first week in February, 1952, to discuss various technical problems related to the reduction of air pollution.

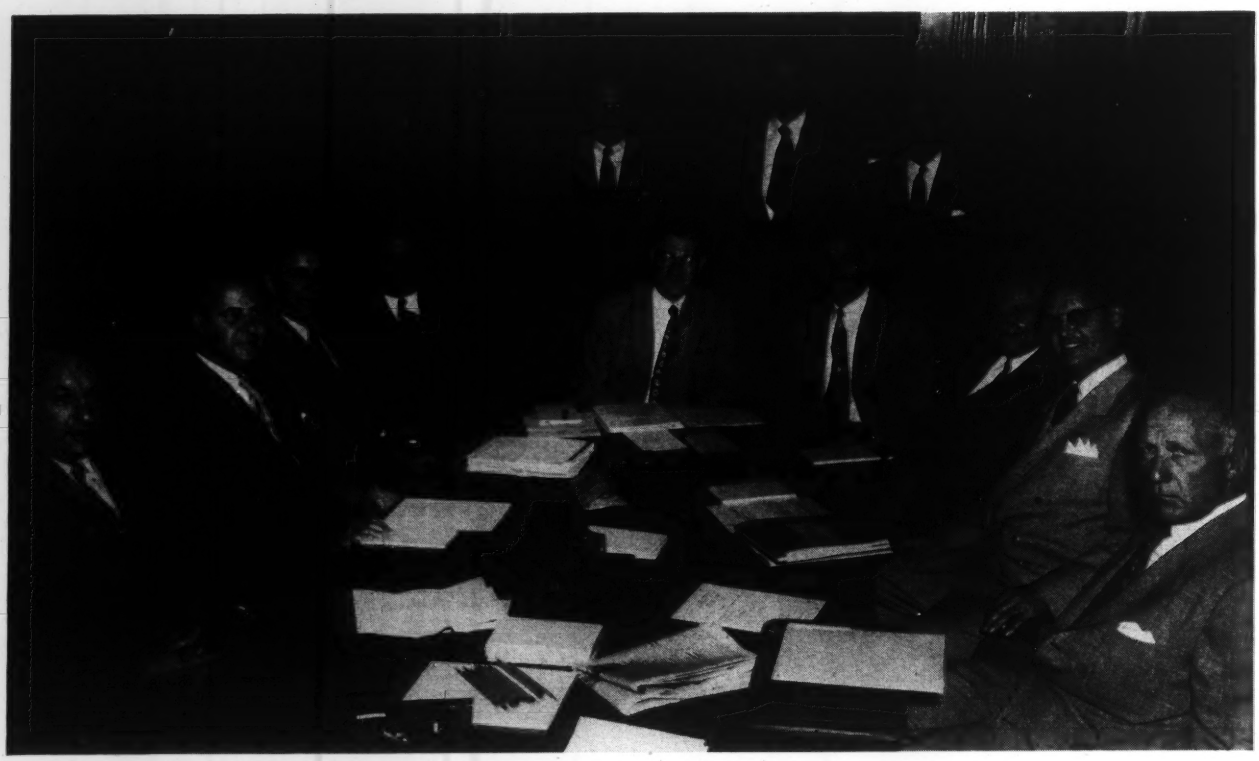
Members of his committee include W. N. Witheridge, Consulting Engineer, General Motors Corporation; W. C. L. Hemeon, Director of Engineering, Industrial Hygiene Foundation; and Dr. Louis C. McCabe, Fuels and Explosives Division, United States Bureau of Mines.

The meeting will be held in Columbus, Ohio, at a place and time to be announced in the January, 1952, issue of AIR REPAIR.

In addition to the Committee members, several Directors have signified their intention to attend. They include Charles W. Gruber, Chief Smoke Inspector, Cincinnati; Harry C. Ballman, Smoke Regulation Engineer, Columbus; Henry F. Hebley, Consultant, Pittsburgh Consolidation Coal Company; and Thomas C. Wurts, Director of Smoke Control, Allegheny County, Pennsylvania. Robert T. Griebling, Executive Secretary, expects to be at the meeting also.

Even though the meeting will be of a technical nature, Dr. Munger hopes that as many Association members as possible attend, and he extends a cordial invitation to all who wish to participate.

Whoever plans to be present at this meeting should communicate with Dr Munger, so that he will know the size of the group to expect, and to make reservations accordingly. He will also have someone arrange for hotel reservations where necessary.

Here's the type of attention-getting exhibit we originally planned. Miss Kay Burt obligingly posed as Miss APCSPAA. But look what happened! The name was too long to fit. We'll just have to shorten it soon.

September Board Meeting. Seated around the table from left to right are Fred W. Classon, Ellis E. Smauder, Henry F. Hebley, John L. Hodges, W. O. Everling, Dr. George R. Hill, Charles S. Frost, and William L. Stewart, Jr. Standing before the fireplace are, left to right, Thomas C. Wurts, Harry C. Ballman, and Robert T. Griebling, Executive Secretary. L. N. Hunter, who also attended the meeting, was not present when the photograph was taken. The meeting place is the Board Room of Mellon Institute.

President's Report

by JOHN L. HODGES

Some very significant advances were recorded at the Directors' meeting held at Pittsburgh on September 21.

First of all, it was decided to establish a fellowship on air purification at Mellon Institute to take the place of the present arrangement, which was rather loose and more or less of a temporary nature.

As you know, our original arrangement with Mellon Institute consisted of sharing the services of Robert T. Griebling, our Executive Secretary, with Industrial Hygiene Foundation.

The Executive Secretary's job developed into a full-sized one right from the start, and sharing a man, we felt, was neither fair to us nor to the Foundation, since both would suffer by not having Mr. Griebling's entire time available. We accordingly completed arrangements by which we obtained Mr. Griebling on a full-time basis.

It is furthermore a pleasure to report that Mr. Griebling attended this meeting after winning out over a protracted illness which kept him confined to his home all summer, although he was able to carry on a considerable amount of work from there. As his health returns completely, he will be able to execute many additional chores which he has already set himself and to which he is eagerly looking forward.

The fellowship will be conducted by Mr. Griebling, with the rank of fellow, in accordance with the instructions of the Board of Directors. He will also edit AIR REPAIR, which he ultimately hopes to convert into a monthly magazine. His third major activity will be to attend to the many other office details which will come his way.

Emblem

A design for a lapel emblem, incorporating the Association's emblem, was adopted, and the Executive Secretary was authorized to conclude negotiations with the jeweler for the necessary dies. He will have a stock of these pins on hand at Pittsburgh, taking orders for them through regular channels. They will cost $3.88 each.

The emblem, if desired, may be incorporated in handsome hand-painted ties, made of the finest Japanese silk by two artists of national prominence, Louise Miller Boyer and Helen King Boyer, her daughter. These, with your personal initials and the emblem, and exceuted in your favorite color scheme, will cost $10.

Whether lapel button or tie, *wear the emblem!* The interest created in this manner will lead to questions about the emblem, and you can then serve as another Association public relations officer by explaining the aims and the purposes of the Association.

Membership

It is indeed gratifying to report that we have added twelve sustaining, ten

company, and forty-one individual memberships to our roster since May 5. They are:

Sustaining Memberships

American Boiler & Affiliated Industries, New York
Representative.....Henry E. Aldrich
American Gas & Electric Service Corp., New York
Representative.....John G. Howard
Chesapeake & Ohio R.R., Cleveland
Representative.....J. W. Bahen
Cities Service Co., Inc., New York
Representative.....E. L. Johnson
Douglas Oil Co. of Calif., Paramount, Calif.
Representative.....Paul J. Frederiksen
Ford Motor Co., Dearborn, Mich.
Representative.....J. A. MacAlarney
Hancock Oil Co. of Calif., Long Beach, Calif.
Representative.....W. T. Hancock
General Petroleum Co., Los Angeles, Calif.
Representative.....P. S. Magruder
Koppers Co., Inc., Baltimore, Md.
Representative.....Edward S. Salner
Pennsylvania Power & Light Co., Allentown, Pa.
Representative.....H. Ferguson
The Texas Co., Los Angeles, Calif.
Representative.....Torrey H. Webb
Weirton Steel Co., Weirton, W. Va.
Representative.....S. M. Neubrauder

Company Memberships

Dravo Corporation.....Pittsburgh, Pa.
Representative.....W. S. Major
Grayson Controls Division...Lynwood, Calif.
Representative.....William Jackson
Jeffries Banknote Co.....Los Angeles, Calif.
Representative.....Allerton H. Jeffries
Monsanto Chemical Co.....St. Louis, Mo.
Representative.....Elmer P. Wheeler
North American Aviation, Inc.....
.....Los Angeles, Calif.
Representative.....Leland R. Taylor
Southern California Edison Co.....
.....Los Angeles, Calif.
Representative.....F. G. Philo
Southern California Gas Co.....
.....Los Angeles, Calif.
Representative.....W. M. Jacobs
Stauffer Chemical Co.....Los Angeles, Calif.
Representative.....Earl Ross
Toledo Edison Company.....Toledo, O.
Representative.....Charles E. Ide
Armco Steel Corporation....Middletown, O.
Representative.....Charles R. Hook

Individual Memberships

W. S. Rosecrans.....Los Angeles, Calif.
William P. Townes.....San Jose, Calif.
Engineer, Santa Clara County Air Pollution Control District
Ross L. Harbaugh.....East Chicago, Ind.
Chief, Chemical Laboratory, Inland Steel Company
Vance N. Jenkins.....Los Angeles, Calif.
Research Supervisor, Union Oil Co. of Calif.
Fred W. Thomas.....Wilson Dam, Ala.
Staff Public Health Engineer, Tennessee Valley Authority
Abe D. Celapino.....Belle Vernon, Pa.
President, Society for Better Living
James J. Boyle.....Ambridge, Pa.
Chairman, Beaver County Smoke Control Association
John N. Voorhees.....Atlanta, Ga.
Superintendent of Steam Heating, Georgia Power Co.
C. E. Lawall.....Huntington, W. Va.
Chesapeake & Ohio Railway
R. C. Riedinger.....Cleveland, O.
Chesapeake & Ohio Railway
Minott Brooke.....Huntington, W. Va.
Chesapeake & Ohio Railway
G. G. Ritchie.....Richmond, Va.
Chesapeake & Ohio Railway
Donald B. O'Neill.....Los Angeles, Calif.
Independent Refiners' Association of California
Norman C. Curtin.....New York, N. Y.
Anthracite Institute
A. T. Miller.....Atlanta, Ga.
Atlanta & West Point Railway
Arthur J. Robert.....St. Paul, Minn.
Investigator
E. H. Shealy.....Cleveland, O.
Cleveland Railroad Operating Committee
Donald C. Coleman.....Cleveland, O.
Superintendent, Republic Steel Co.
G. M. Swartz.....Akron, O.
Baltimore & Ohio Railroad
George Peacock.....Cleveland, O.
Joint R. R. Inspector
L. M. Leikel.....Hammond, Ind.
Road Foreman of Engines, Pennsylvania Railroad
L. L. Rogers.....Alexandria, Va.
Assistant Road Foreman of Engines, Pennsylvania Railroad
A. T. Mitchell.....Pittsburgh, Pa.
Chief Smoke Inspector, Pennsylvania Railroad
S. B. Nellis.....Pittsburgh, Pa.
Baltimore & Ohio Railroad
Otto E. Dudy.....Milwaukee, Wis.
Smoke & Air Pollution Inspector
Ray J. Restle.....Milwaukee, Wis.
Smoke & Air Pollution Inspector
Louis Elliott.....New York, N. Y.
Consulting Mechanical Engineer, Ebasco Services, Inc.
George A. Deering.....River Rouge, Mich.
Smoke Inspector
Rudolph G. Felger.....Detroit, Mich.
Assistant Superintendent of Central Heating, Detroit Edison Co.
A. J. Gock .....Los Angeles, Calif.
Chairman of the Board, Bank of America, NTSA
Herman F. Hahn.....Los Angeles, Calif.
President, Union Bank & Trust Co.
R. Marcel Lafaille.....Montreal, Canada
City Councillor
Ben Moreell.....Pittsburgh, Pa.
President, Jones & Laughlin Steel Corp.
J. H. Smith.....Fontana, Calif.
Assistant to Superintendent, Kaiser Steel Corp.
Chester A. Snell.....New York, N. Y.
Director, Analytical Dept., Foster D. Snell, Inc.
Dr. Royal W. Sorenson.....Pasadena, Calif.
Chairman, Anti-Air Pollution Committee
Arthur C. Stewart.....Los Angeles, Calif.
Vice President, Union Oil Co. of Calif.
Claude M. Weinheimer.....Detroit, Mich.
Head, Research Dept., Detroit Edison Co.
Harold W. Wright.....Los Angeles, Calif.
General Manager, Los Angeles Chamber of Commerce
A. M. Zarem.....Los Angeles, Calif.
Director, Stanford Research Institute

To all these newcomers I extend a hearty welcome in the name of the Association. We are grateful for the faith they have shown in us and our aims, and we sincerely trust we will be of assistance to them in their crusade against air pollution, so that they will find their membership of value.

It is most encouraging to see our Association grow so vigorously. Our plans are many, and to execute them properly, we need even further support. Talk up your Association wherever you go. And if, for some reason or other, there are individuals or companies in your locality which you hesitate to approach, give their names to the Executive Secretary and he will solicit them.

Finances

I am happy to report to you that we now have an annual income of about $28,000. From the activity indicated above, we will no doubt be able to increase our actions in the future. We anticipate spending between $21,000 and $22,000 this fiscal year, and retiring the remainder of our income in a sinking fund.

Cleveland Meeting

Enthusiastic plans are being made by W. O. Everling, H. G. Dyktor and others to have next year's annual meeting at Cleveland exceed in interest the Roanoke meeting. This will take some doing, as the 350 delegates registered at Roanoke constitute the most successful meeting held in the annals of the Association.

Legal Examples

We are most anxious to inaugurate a legal reporting service for members of our Association. Whenever, therefore, a case comes up in your community which concerns litigation over air pollution, will you be kind enough to write a resume of the case and send it to the Executive Secretary? He will then publish it in the earliest possible issue of AIR REPAIR. This is a service which can grow to considerable proportions and be of immense value to all members of the Association. Your cooperation is earnestly requested.

Attendance

Only four of our sixteen Directors were unable to be present. The rest sat through a long meeting with great interest. We did not adjourn until six o'clock. The only recess between 9:30 a.m. and that time occurred when Dr. Edward R. Weidlein, President of Mellon Institute, invited us to have luncheon at the University Club.

Those present were Harry C. Ballman, Fred W. Classon, W. O. Everling, Charles S. Frost, Charles W. Gruber, Henry F. Hebley, Dr. George R. Hill, John L. Hodges, L. N. Hunter, Ellis E. Smauder, William L. Stewart, Jr., and Thomas C. Wurts.

PITTSBURGH PLATE PRAISED FOR VOLUNTARY ABATEMENT AT KEENE, N. H., FACTORY

Electronic eyes that never sleep are on constant patrol to see that no black smoke gets up the stack at the Pittsburgh Plate Glass Company's brush division plant at Keene, N. H.

As soon as the smoke in the stack reaches a certain density, an electric eye located at the entrance to the stack kicks on a big fan. Jets of air are forced into the fire, providing better combustion and reducing smoke almost to zero.

The new equipment, installed at a cost of more than $3,000, was not added in response to a smoke control law or ordinance, but because Pittsburgh Plate Glass wants to be a good neighbor and recognizes the social cost of doing business.

The new equipment at Keene is good economics as well as good community relations. It will pay for itself by getting more heat from the combustible material that formerly went out the stack in thick smoke.

The Keene *Evening Sentinel* was so pleased with the action taken by Pittsburgh Plate Glass that it ran the following editorial:

Dense smoke from the stack of the Pittsburgh Plate Glass Company's Plant at Keene, N. H., pollutes the air.

The Voluntary Way

The voluntary action of a leading local concern to eliminate a nuisance which has been plaguing its neighbors is a far cry from the old days.

There was a time when industrialists, some of them, didn't give a hoot what kind of trouble was caused by their installations.

Today all that is different. Modern plants have modern ideas of the need for good relations with the people of the communities in which they operate.

Pittsburgh Plate Glass, however, deserves applause for going farther than anyone else to prevent source of friction with the city in which it lives.

The installation of a smoke elimination system, before there was any concerted action, is leadership of the best kind.

Sure, a city can go to law. It can provide an ordinance against excessive smoke going into the air. It can enforce the ordinances and punish those who break the law.

But how much better it is to have a large concern voluntarily do away with the trouble before any action is taken. It leaves a better feeling all around. It is the type of industrial cooperation which makes an industry a true part of a city, instead of only a resident therein.

Pittsburgh Plate Glass ought to be proud of the wholehearted manner in which the *Sentinel* praised it for this deed. There are many other industries who deserve the same kind of praise for their neighborly attitude, but who, for some reason or other, are bypassed.

When Harry C. Ballman, Smoke Regulation Engineer at Columbus, and Director of AP&SPAA, saw the editorial, he was impelled to write to Pittsburgh Plate, praising the company for its action and adding: "Unfortunately, I do not believe that industries take sufficient credit for the work they are doing in this respect."

Mr. Ballman is right. And as AIR REPAIR grows, it is our purpose to call attention to other companies who do their best to be good neighbors and to minimize a nuisance which has so many deploring effects.

Cities and industries with smoke abatement problems may be interested, according to a recent issue of *Trends*, published by the National City Bank of Cleveland, in a new, unpatented device contrived by Walter C. Gaumer, Superintendent of Power, Keystone Steel and Wire Company, Peoria, Ill.

"Installations have been made at two high schools for as little as $200 each. . . . In the Gaumer mechanism, a photo-electric cell measures the density of smoke leaving a stack. When an undesirable density is reached, an air jet goes into operation over the fire bed, blasting the smoke and ash particles out of the chimney exhaust and returning them to the firebox for complete burning.

Tests indicate fly ash is reduced as much as 95 per cent.

After installing $3,000 worth of air pollution control equipment, the Pittsburgh Plate stack at Keene looks like this.

CANADIAN PAPER RUNS COLUMN ON AIR POLLUTION PROBLEMS

There's a swell job being done in Canada on educating the public in regard to the evils of air pollution. And John O'Hanley, Chief Smoke Inspector of Hamilton, Province of Ontario, can take full credit.

Mr. O'Hanley writes a column entitled *Smokey* for the *Hamilton Spectator*. He is Smokey, but he's too modest to say so. However, he gets his message across to the people of Hamilton, and that's most important.

In the column, Mr. O'Hanley points out the many unsolved problems requiring attention, and also educates the reading public on the complexity of the studies that are being made or should be made before Hamilton can truly say it has purged itself of unclean air.

After News Story

One day Mr. O'Hanley was approached by the City Hall reporter, who wanted news of the progress being made in smoke abatement. Mr. O'Hanley gave the man a story relating to a local incident involving a complicated problem. The story caused quite a lot of comment, yet it was typical of the many Mr. O'Hanley had to deal with. He suggested, if the paper were interested, that he would be glad to write a series of articles on air pollution control, so that the public would become more aware of the difficulties involved.

The matter was referred to St. Clair Balfour, managing editor of the *Spectator* and a civic-minded citizen. He and the paper's city editor unhesitatingly endorsed the venture as a public service to the whole community. To date, an article a week has been published. Mr. O'Hanley is glad to continue writing them, as they are one of the best means of letting people know the status of air pollution abatement progress.

O'Hanley's Advice

The following article is typical of those Mr. O'Hanley has been writing:

"The major problems at the moment are education, health relationships, economic and administrative.

"In building an efficient staff for any air pollution control program we stress 'No written ordinance will endure without sustained, active, and forceful public opinion and support.' The Smoke Abatement Advisory Committee of Hamilton is well aware of the fact that in many communities a 'Cleaner Air Program' has been launched with a great deal of fervour and fanfare, but has failed to follow through. The fanfare dies, the fervour rapidly subsides; the program becomes a short-lived campaign.

Hamilton, Ontario, Canada, is the gateway to vacation land for hundreds of thousands of American tourists each year. It is a pleasant and hospitable city—but it has its air pollution problems, as the accompanying article amply demonstrates.

The reasons for failure are many, the most important of which are: 1. The lack of proper appreciation of the problems involved; 2. Inadequate financial support; 3. Cities want air pollution control but few are willing to pay for it; 4. Only a few cities on the American continent have provided adequate funds to assure a successful long range program. Most cities are still thinking in terms of too little money. Hamilton has been no exception in the past. All citizens hope for a miraculous method of improvement accomplished at little expense and in a relatively short time.

"The American Society of Mechanical Engineers is on record as stating in the foreword to the example sections for a smoke regulation ordinance prepared by the Model Smoke Law Committee, that at the outset it is well to recognize that all differences of opinion and all controversy relative to a smoke ordinance are basically economic.' The necessary compromises and agreements could be more readily reached if this were constantly kept in mind.

Compromises Necessary

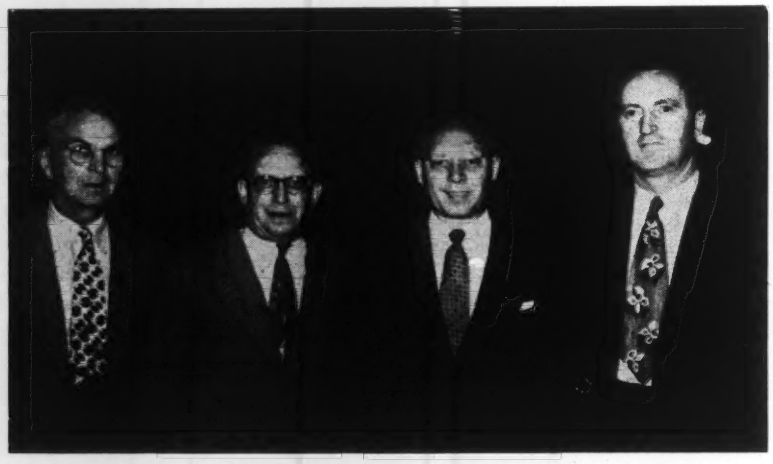
"What is considered some economic compromise? The success and life of the ordinance depends upon the sagacity of this compromise.

"This simply means: how much will the citizens individually and collectively pay for air purification? How much can they afford? What can industry and commerce afford? More specifically, what can the marginal industries afford?

"Contarary to common belief, we never get anything—even clear air—for nothing. Apart from the better combustion of combustible gases, it is only rarely that the cost of removal and disposal of air pollution can be recovered. Except in rare cases, any change in equipment or processes must eventually be reflected in increased cost to someone, whether manufacturer or ultimate consumer.

"What about air pollution and health? This is another unsolved problem. What ingredients in the air of our cities are harmful to health? In what proportion

do they exist? Many false claims have been made in the past and still persist as to loss encountered due to lack of sunshine, deaths due to cancer or other ailments attributed to murky skies. What are the truths behind these statements? Just recently we have received a copy of Atmospheric Pollution as a Geographic or Regional Environmental Causative Factor in Degenerative Diseases Including Cancer, by Alexander Levitt, B.S. D.O., Head of the Department of Arthritis and Rheumatoid Diseases, New York Osteopathic Clinic. This work was prepared for Mayor William O'Dwyer of New York City.



When an analysis of Hamilton's air pollution problems was presented to civic authorities last June, these four men were present to clarify any obscure points. They are, left to right, John O'Hanley, City Smoke Inspector; Alderman Sam Baggs, Hamilton; H. B. Lammers, Chairman and Director of Engineering, Coal Producers' Committee for Smoke Abatement; and E. Ray Norgate, Secretary of the Hamilton Branch, I.P.E.

Health Hazards Recognized

"We do not pretend to contradict the findings of health and medical authorities. That there are conditions which can and do prove injurious to human health and welfare is recognized. That these conditions are of common occurance is still highly doubtful. Fortunately, the Advisory Committee in Hamilton is tied in with the public health department officials. Possibly we should, in the near future, be tied in with the Medical Association and determine the facts once and for all, if possible, for these causes and effects. The public looks for facts and figures relative to air pollution problems. The solution to this lies in research and continual statistical studies by medical associations.

"We are well aware of the fact that the paramount importance of the Advisory Committee, at the moment, is selling the necessity of an air pollution program to the municipal family, to service clubs, industrialists and commercial interests, apartment owners, operators of fuel equipment, and the general public. If this selling job is not handled on a continuing basis the program will soon be on the defensive. The best legal control instrument that can be written will fail if the official in charge of the administration is incapable of this selling job. We realize that a good administrator must be proficient in the field of combustion, he must be a good organizer, adept at meeting the public, be prepared to take the bumps and criticisms of the public and be prepared to interpret the rules of an ordinance as a competent administrator.

"The Advisory Committee solicits the support of all citizens, in assisting the efforts of the chief administrator and staff in their desire to show what is possible by sane administraton and sustained initiative. Your comments and counsel are sincerely. solicited to assist us in the task that lies ahead."

Favorably Received

The reaction to these articles has been most favorable.

"By the telephone calls and letters received to date from local and surrounding communities," Mr. O'Hanley said, "the *Hamilton Spectator* can be credited with a great measure for any success we may be able to accomplish in Hamilton in air pollution abatement.

"I have received requests for copies of these articles from the Mayor of the city of London, Ontario, which is now in the process of organizing a Smoke Abatement Department. Brantford and Kitchener officials have also commented very favorably on the articles, and the splendid assistance the *Spectator* is extending to us."

New Department Formed

Drawing the attention of the residents of Hamilton to air pollution problems brought results. A new department—the Smoke Abatement Division in the Building Commissioner's office—was started. O'Hanley, formerly with the Department of Health, heads the Department. His assistant is Joseph Reid, also of the Health Department. A third man will join them as soon as he has been selected.

The *Hamilton Spectator,* in its issue of August 1, stated:

"The role of the smoke abatement division is to administer the smoke abatement program and enforce the smoke abatement law. There will be hundreds of inspections made of installations of fuel-burning equipment, for which permits are not required under the by-law. The inspectors will trace down the source of smoke nuisance about which citizens complain. They will show operators how to control smoke by proper firing methods.

"Some day the department will probably have inspectors specializing in air analysis to deal with problems arising in districts where there are chemical fumes in the air. The development of the St. Lawrence Seaway and resulting industrial growth would be certain to lead to an expanded smoke abatement program."

Helping Mr. O'Hanley is an advisory committee, excellently chosen. It consists of a health officer, a boiler manufacturer, a representative of City Council, the secretary of the local chapter of the Institute of Power Engineers, a Westinghouse combustion engineer, the Hamilton building commissioner, and a mechanical engineer.

EAST CENTRAL SECTION MEETING WELL ATTENDED

L. E. Bunts Elected Chairman

The two-day meeting of the East Central Section of the Air Pollution and Smoke Prevention Association of America, held in Detroit on September 13 and 14, was attended by 113 air pollution control officials, industrial representatives, industrial health officials, and others interested in the problem of air pollution control.

L. E. Bunts, Smoke Regulation Engineer, Akron, was elected Chairman of the section. Other elected officers were: Harry C. Ballman, Smoke Regulation Engineer, Columbus, Secretary (he had been chairman of the Detroit meeting); and Eli May, Chief, Bureau of Engineers License and Smoke Abatement, Erie, Pa., Treasurer.

Seventeen cities were represented by the control officials. The setting for the meeting was the beautiful new Veteran's Memorial Building, dedicated to the memory of those who served our country in the past war. It is located on the Detroit River, and will be the center of a civic development being planned by the city at this site.

Joseph P. Wolff, Commissioner, Department of Buildings and Safety Engineering, Detroit, gave the address of welcome. In it he emphasized the fact that the Detroit Ordinance was sponsored by the Detroit Engineering Society and was passed in 1947. Since then it has been expertly administered, and the officials have kept faith with the objectives of the ordinance, so there has been smooth sailing.

Coke Plant Emissions

F. A. Dudderar, Division Superintendent of Coke Plants, United States Steel Company, Clairton, Pa., described the efforts which have been made to reduce emissions from coke plants. He listed the following as the prinicpal scources of emissions:

A. The charging operations, during which a violent reaction takes place, resulting in an emission of smoke, coal dust and volatiles. A reduction of air pollution from this source is accomplished by charging with the gas take-offs open.

B. Battery stacks. When combustion is proper, there is no visible emission from the battery stacks. However, as the batteries get old and begin to leak, color appears. Proper maintenance reduces emissions from the battery stacks.

C. Quenching operation. It was explained that the quenching operation is one of the ways to dispose of water used throughout the plant. A solution to this problem is finding other ways to dispose of the process waters and apply dry quenching.

D. Oven leaks. Emissions from oven leaks have been greatly reduced by the use of self-sealing doors. Again at this point, maintenance is important.

E. Distillation operations. Throughout the distillation operation, gases are bled from one process to another. Careful integration of the entire system is necessary to maintain a smooth flow of gases from one point to another. When something happens, gases must be bled and disposed of

General Motors threw the party. Those having fun included, left to right, A. D. Muldoon, Combustion Supervisor, Allegheny County Bureau of Smoke Control; Harry C. Ballman, Smoke Regulation Engineer, Columbus, Ohio; L. A. Danse, General Motors Corporation, Detroit; C. W. Daubert, Allegheny County Bureau of Smoke Control; Al L. Kiewit, Coal Producers Committee for Smoke Abatement, Cincinnati; Charles Gorman, Peabody Engineering Company; Alderman Sam Baggs, Hamilton, Ontario, Canada; James Danver, Combustion Engineer, Peabody Engineering Company; A. E. Zenk, James Manufacturing Company, Ft. Atkinson, Wis.; John O'Hanley, Chief Smoke Inspector, Hamilton, Ontario, Canada; Jack Hurley, Trumbull Asphalt Company; Philip J. Trochio, Barrett Division, Allied Chemical & Dye Corporation.

Incinerator Committee and Discussants. Back row, left to right: Chester L. Heidman, Morse Boulger Destructor Company; C. Geoga, D. L. Germaine, American Incinerator Corporation; Jack Rogers, Joseph Goder Incinerators. Second row: C. John Kure, Plibrico Jointless Firebrick Company; C. W. Daubert, Allegheny County Bureau of Smoke Control; George J. Richers, Philadelphia Division of Air Pollution Control; H. J. Scott, Cleveland Bureau of Smoke Abatement; Richard Goder, Joseph Goder Incinerators; Benjamin Linsky, Acting Chief Smoke Inspector, Detroit. First row: Ellis E. Smauder, President, American Incinerator Corporation; Harry C. Ballman, Smoke Regulation Engineer, Columbus; Frank Gibbons, Assistant Smoke Engineer, Detroit; Austin Tomlinson, Detroit Department of Buildings and Safety Engineering; H. K. Kugel, Director of Inspection, Washington.

quickly. It is important therefore that all equipment be properly maintained in good working order, and regulated to function smoothly in relation to other pieces of equipment to reduce emissions from bleeding operations.

Mr. Dudderar summarized the problem by stating that the reduction of emissions from the operation of coke ovens is one for the designer, the operator, and the maintenance man.

Approving Hand-Fired Coals

Austin Tomlinson, Bureau of Smoke Abatement, Detroit, presented a paper which outlined the Detroit procedure for field testing coals. It was explained, after citing Detroit's earlier experiences, that the present test boiler is a horizontal return tubular boiler having 750 sq. ft. of heating surface, or 30 sq. ft. of grate area.

In order to qualify as equivalent to smokeless coal, as defined in the ordinance, the stack must go from "smoke" to "clear" in not more than three minutes. An exception to this time limit may be taken when the coal being tested does not exceed No. 2 Ringelmann, and that shade must not persist more than four minutes. The hand-fired coals must have smoke-producing characteristics equivalent to coal under 23 per cent volatile content.

It was pointed out that since the test was inaugurated, 392 coal-burning tests have been made—up to August 27, 1951. Of these, 148 resulted in approvals. The paper pointed out that criticism of the Detroit test is based on the fact that the hot fuel over which the coal under test was being fired is a different coal than that being tested, and that further the test is over-simplified.

In defense of the Detroit method, Mr. Tomlinson stated that field experience by users of approved coals in the Detroit area has verified the validity of the tests to a considerable degree.

Refinery Problems

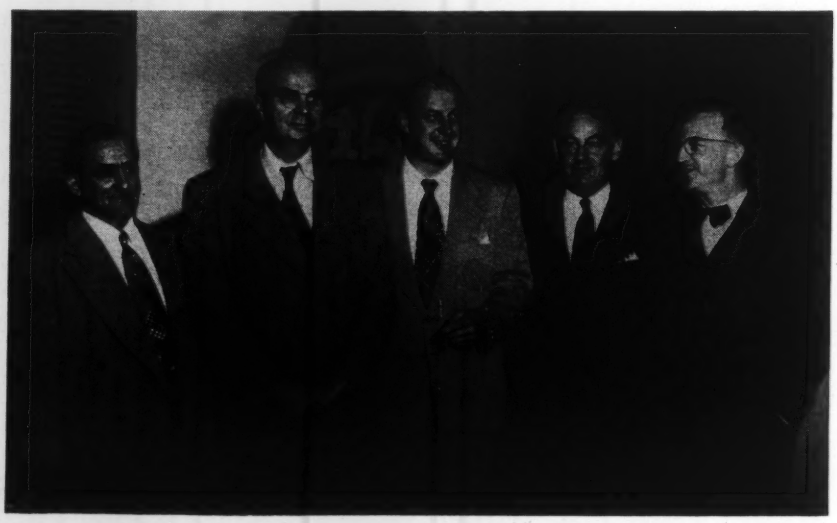
E. Moriarity, Chief Engineer, Aurora Gasoline Company, Detroit, discussed many points of emission and control equipment which the company developed at its refining and cracking plants.

The speaker pointed out that as the company grew its contribution to the pollution of the neighborhood was also increased. In other words, as production increased, many processes became nuisances due to the simple fact that total volumes increased to the nuisance level.

The improvement program at Aurora began in 1941 with a change in attitude on the part of top management. Prior to this time the management of the company had felt that they were good neighbors, with an adequate program of protection, and they were very much surprised to find themselves the defendants in a law suit for creating a nuisance in the neighborhood.

The management felt this matter personally, and immediately intensified its efforts. The control program was accelerated by a spirit of cooperation between management, neighbors, and city officials.

The air pollution officials of Detroit testified to this cooperative spirit, and at the present time there is no question but what this company has used every means available to keep pollution under control.



Get-together at Detroit. Left to right, Charles Bartels, International Boiler Company; Fred Pearson, mechanical engineering consultant; Charles Gorman and James Danver, Peabody Engineering Company; and Arthur Borden, Hagan Corporation. All are Detroiters with the exception of Mr. Danver, who came from New York.

Control Officials' Conference

While the two-day meeting was open to the general public and interested friends, one closed session was held in which air pollution control officials could discuss their immediate problems with each other. This type of meeting has been of immense benefit in other professional organizations, as it enables participants to discharge their thoughts without fear of a premature conclusion bringing embarrassment publicly.

During the discussion, Harry C. Ballman, Smoke Regulation Engineer of Columbus, demonstrated the optical smoke comparator, a new color intensity measuring device. This comparator incorporates four shades of smoke within a circle, which has an opening in the center for viewing the smoke, comparing its density with a shade scale.

Other subjects included in the discussion were: (1) means of reducing smoke from scrap yard operations, particularly the burning of automobile bodies, and (2) burning out of drums for reclamation.

Area-Wide Pollution Studies

A panel discussion on the characteristics of a comprehensive area-wide air pollution study developed a number of interesting points. The practical limitations of an area-wide study, it was brought out, would be centered around a metropolitan area, and may cross city and county lines in the same degree that meteorological areas cross those lines.

Air pollution from neighboring metropolitan areas in the order of 20 or 25 miles distant, or heavy point sources, such as forest fires hundreds of miles away, have an effect upon the pollution over a city, but it would be difficult to determine such effects, and then, having determined the effects, control of such distant sources would not be feasible. Therefore studies of area pollution, in order to be practical, should be confined to the metropolitan area.

It was further pointed out that the Technical Advisory Board to the International Joint Commission has considered the area 15 miles on either side of the Detroit River as affecting the flow of pollution back and forth across the border.

Discussion centering around the equipments and skills utilized in conducting an area-wide survey brought out that the air pollution control official, the chemist, the engineer, the meteorologist, the physician, the industrial hygienist, the botanist and biologist, and many other specialists are necessary in conducting such a survey.

Because of the small concentrations, very expensive and specialized equipment is necessary. It was pointed out that in an area much of this equipment is available in industrial organizations, and that in general, industry is pleased to cooperate with such undertakings, making its equipment available.

Anyone planning a survey would do well to look about and take advantage of the personnel and equipment already available throughout the area. Unless this is done, the cost of a survey becomes astronomical. It has been estimated that the cost of the Detroit area survey amounts to $200,000 per year, and it is hoped that the survey will be completed in five years.

It was further brought out that a statistician should be brought into an area-wide survey, and that the large amount of data eventually assembled should be put on automatic tabling machinery.

Following the panel discussion, an interesting display of air pollution determination equipment was viewed. The display included two mobile trucks used by the City of Detroit and the United States Public Health Service.

One of the mobile trucks used in the city of Detroit for air pollution determination. It was demonstrated at a panel meeting of air pollution control officials.

Mayor Albert E. Cobo, of Detroit, center, welcomes the East Central Section to Detroit. He is shaking hands with Benjamin Linsky, Acting Chief Smoke Inspector, while J. W. Shaw, Assistant to the Vice President, Aurora Gasoline Company, looks on. He was recently Chief Smoke Inspector of Detroit.

Marine Boilers

E. D. Benton, Ohio Coal Association, discussed smoke control of coal-fired boilers in marine service, while similar boilers, oil-fired, were discussed by Capt. John Danver, Peabody Engineering Company. The results of the Great Lakes Air Pollution Abatement Program was summed up by Mr. Benton as follows:

"As an indication of the progress made and the eagerness of the fleet operators to do something about smoke abatement, there have been between 25 and 30 stoker-fired ships equipped with approved GLAPAP-designed overfire jet systems; eight hand-fired scotch-marine-boilered ships have been equipped with steam-air jets similar to the test installation ashore, but without automatic controls.

"Three hand-fired water-tube-boilered ships have been equipped with BCR steam-air jets; four ships were equipped with various experimental jet arrangements . . . for both the stoker-fired and hand-fired boilers; there are also about 25 ships equipped, independent of the GLAPAP program, with overfire jets of various designs.

"In fact, one fleet consisting of 22 ships has contracted with a marine repair yard to equip all of its ships with GLAPAP-approved jets. Another fleet of over 60 vessels is equipping its ships with approved jets as fast as time and operating conditions permit. Other fleets are progressing the installation of jets in a similar manner, and it is hoped that at least all fleet members of the Lake Carriers' Association will have adequate smoke abatement devices in the near future."

Business Meeting

The following policy procedures were adopted during the business meeting. They were presented by Mr. Bunts, Chairman of the Committee on Policies and Procedures:

Anyone interested in smoke and air pollution control will be welcome to register for the morning and afternoon meetings of the two-day session.

The right to vote shall be granted only to members in good standing of the Air Pollution and Smoke Prevention Association of America attending the meeting.

The summer meeting shall be held on the Thursday and Friday of the second full week in September. The officers of the Association are authorized to change the meeting date.

The winter meeting shall be held on the Thursday and Friday of the first full week in February. The officers of the Association are authorized to change the meeting date.

The place of meeting shall be determined by majority vote one year in advance of said summer or winter session.

The first day of each session shall be made available for presentation of papers by members of industry on specific phases of air pollution and its control.

A closed session for governmental smoke and air pollution control officials and personnel shall be made available on the evening of the first day.

The second day of each session shall be made available for presentation of papers concerning enforcement, methods of evaluation, and standards for smoke and air pollution control.

The purpose of this sectional meeting shall be to carry out the policies and to promote the purposes of the APCSPAA, and encourage communities within our region to understand and join us in our efforts to clean up the atmosphere for better living.

The officers shall consist of a chairman, a secretary, and a treasurer, and shall be elected for one year, to serve from the closing of the fall meeting through the meeting of the following year.

The procedures adopted at the Pittsburgh meeting, February 8 and 9, 1951, will be part of the policies of the East Central Section.

The policies, with respect to the selection of the place of meeting, will go into effect at the February, 1952 meeting.

A rising vote of thanks was given to the retiring officers, and particularly to Charles N. Howison, Executive Secretary of the Smoke Abatement League of Cincinnati, Hamilton County, Ohio, who has served as secretary of the section since its inception three years ago.

Mayor Albert E. Cobo, of Detroit, was the keynote speaker at the luncheon the first day. He told them the "Detroit Story," citing the many civic improvements which are under way in Detroit at the present time. The General Motors Corporation was host to the group at a very lively buffet supper following the first day's sessions.

Linsky Succeeds Shaw in Detroit Smoke Department

Benjamin Linsky, a graduate engineer with many years' experience, was named Acting Chief Smoke Inspector, City of Detroit, following the resignation of J. W. Shaw.

Mr. Linsky, a native of Detroit, is a graduate of both Wayne University and the University of Michigan. With the exception of the war years, when he served the Detroit Ordnance District as a safety officer and later as a contract terminations officer, he has been an employee of the City of Detroit since 1936, when he joined the Department of Buildings and Safety Engineering.

Two years later, Mr. Linsky became an Inspector of Inflammables in the Safety Engineering Bureau, a position he held until he joined the United States Army in 1941. From the close of the war until 1948 he was a management consultant, and then returned to the City of Detroit as Senior Assistant Mechanical Engineer (Combustion), Smoke Abatement Bureau. A year ago he was advanced to Senior Associate, and two months ago assumed his present title.

Mr. Linsky is also a special instructor in the College of Engineering, Wayne University, and a special lecturer at the University of Michigan Extension School. He has written a number of interesting treatises on air pollution control, such as the one he presented with his predecessor at the AP&SPAA meeting in Montreal in 1950, entitled "Instrumentation and Procedures for Quantitative Measurement of Visible Smoke and Solids Discharged from Individual Sources."

In collaboration with J. W. Shaw and Austin Tomlinson, of the Detroit Bureau of Smoke Abatement, he presented a paper on the "Detroit Test for Approving Hand-Fired Coals Equivalent to Smoke-Producing Characteristics of Coals Under 23 Per Cent Volatile" before the Detroit meeting of the East Central Section of the AP&SPAA last month.

Mr. Linsky is very active in various technical organizations, including the American Industrial Hygiene Association, the American Society of Heating and Ventilating Engineers, the Society of Technical Safety Engineers, and the American Society of Safety Engineers. He is chairman of the Affiliate Council of the Engineering Society of Detroit, and co-chairman of the Science and Engineering Committee of the Detroit 250th Birthday Festival. In AP&SPAA, Mr. Linsky is a member of the Marine and the Odors, Vapors, and Noxious Gases Emissions Committees.

Wes Shaw

J. W. Shaw, who resigned as Chief Smoke Inspector of Detroit to become Assistant to the Vice President, Aurora Gasoline Company, Detroit, studied at both the Missouri School of Mines and Ohio State University, from which he was graduated in 1932.

His first position after graduation was with the National Tube Company, Lorain, Ohio, as a fuel engineer. He subsequently held a similar position with the United Fuel & Coke Company, Milwaukee, and then transferred to sales with the Fellenz Coal and Coke Company, also in Milwaukee.

From 1942 to 1946 Mr. Shaw was with the Northwest-Hanna Fuel Company, Menominee, Mich., rising to Assistant Manager, and in the following year he was named a vice president of Limestone Products, Menominee. In 1947 he became associated with the Wisconsin Coal and Dock Company, Milwaukee, and in 1948 he moved to Detroit, joining the Department of Buildings and Safety Engineering. In September of that year he was promoted to Chief Smoke Inspector.

Mr. Shaw wrote a number of papers on atmospheric pollution studies for various technical journals. Some were also presented at AP&SPAA annual meetings.

Incomplete Records

In checking over the files at the headquarters office it was found that a number of volumes of the Proceedings are missing. The Executive Secretary would appreciate it greatly if members would search their own files and turn over to the Secretariat copies of Proceedings for 1908, 1909, 1910, 1911, 1912, 1913, 1919 and 1922. If these are found, the central office would then have a complete set of Proceedings for the Association's archives.

Making Progress to Abate Marine Boiler Emission

Considerable progress has been made in abating objectionable smoke from hand-fired Scotch marine boilers on the Great Lakes, according to a report from the Engineering Advisory Committee of the Great Lakes Air Pollution Abatement Program.

The Committee met recently to review the tests which were conducted by Battelle Memorial Institute on a boiler installed at Lorain, Ohio.

With the new automatic controls, the tests showed, plus steam-air jets, the smoke emission from these boilers during firing cycles is reduced from a No. 5 Ringelmann density to less than a No. 2.

This conforms to present emission standards permitted by local ordinances. Additional research will be made on Canadian vessels. The Committee is elated over the progress made because no major changes either in fuel or equipment was necessary in order to achieve results.

Observations show a considerable improvement in the general overall smoke emission from vessels plying between international boundaries in the Detroit area. Since January 1, overfire jet installations have been made in 50 stoker-fired and 11 hand-fired vessels.

The hand-fired installations at first gave some trouble, but now that all difficulties have been removed, it is expected that the work will proceed rapidly during the next lay-up period after the closing of lake shipping during the winter months.

The Great Lakes Air Pollution Abatement Program is only 18 months old, yet it is felt that already considerable progress has been made. The program is sponsored by the Lake Carriers Association, Dominion Marine Association of Canada, and Bituminous Coal Research, Inc.

Assisting in the program are the Coal Producers Committee for Smoke Abatement, and the Marine Committee of the Air Pollution & Smoke Prevention Association of America, composed of smoke inspectors from lake port cities and the Technical Advisory Board of the International Joint Commission.

WHO'S WHO IN AIR PURIFICATION

The fight for cleaner air has been going on for a long time. In the 44 years the Smoke Prevention Association, and its successor, the Air Pollution & Smoke Prevention Association of America, have been functioning, the challenge has attracted many interesting people.

It is the intention of AIR REPAIR *to give thumbnail sketches of some of the leaders in the war against air pollution from time to time. In this issue no better start can be made than to do a story on William G. Christy, who, as Director of New York's Bureau of Smoke Control, has more than his share of the problems pertaining to air purification.*

If one were asked to pick a typical director of a smoke control bureau, William Gaston Christy could easily qualify.

A typical director of a smoke control bureau is an engineer with a thorough grounding in manufacturing technique and the ability to 'deal with various divergent groups of homo sapiens, all of whom have the same goal—cleaner air—although their approach is often quite different.

A smoke bureau director must have a thick skin and must not be offended by those whom he makes toe the mark. He must be able to enforce ordinances, yet he must also have sufficient detachment so that he can go about his work in a practical manner. He must be able to endure the prodding of newspapers who, well-meaning though they be, often do not understand the complexities of a given engineering problem and therefore lose patience with a project which may take years before it can be satisfactorily completed. Yet such prodding has merit: it forces the smoke bureau director to keep on his toes and, by close contact with the newspapers, educate them in the program he has launched.

A smoke bureau director must, above all, have a sense of humor. Bill Christy has it, as the wry smile in the accompanying photograph reveals. And Bill Christy needed it countless numbers of times in the many long years he has put in since his graduation from Cornell University in 1911.

The Jerseyville, Ill., native went to work in St. Louis as a layout engineer in a boiler company. Shortly thereafter, he organized his own company and became a manufacturer's agent for heating and power plant equipment.

When the United States entered World War I, Mr. Christy became production engineer for the Emergency Fleet Corporation, St. Louis district. He expedited equipment and made surveys of manufacturing plants. He was also later in charge of contract cancellations.

Mr. Christy began his smoke abatement work in 1926. At that time he helped to organize the Citizens' Smoke Abatement League of St. Louis, whose executive secretary he later became. This league undertook one of the most comprehensive smoke control campaigns in the United States, and clean St. Louis can tip its hat to Bill Christy for the assistance he gave 25 years ago.

As the result of his work in St. Louis, Hudson County, New Jersey, containing such active industrial cities as Hoboken and Jersey City, asked him to organize and head a department of smoke regulation. This department, in cooperation with railroads, marine and industrial companies, has been most successful in its smoke elimination program, and has had a number of illustrious graduates, among whom John L. Hodges, our President and Director of Philadelphia's air pollution control program, is an outstanding example.

By 1950 the smoke reduction in Hudson County had reached 85 per cent of that which prevailed 20 years before, thanks to Bill Christy. New York City, casting about for a director of the Bureau of Smoke Control, picked Bill for the job, on the recommendation of the American Society of Mechanical Engineers, the National Association of Power Engineers, and the American Society of Heating & Ventilating Engineers, plus a committee of university professors.

The New York call presented a challenge which he could not ignore. And so today you find him, a popular writer and speaker on the subject of air purification, loaded with honors in the fields of engineering and science, tackling the biggest job of his career at the age of 65.

Bill Christy has been a member of our Association for the past 20 years, and served as president in the 1948-49 term. In the American Society of Mechanical Engineers, to which he was elected in 1919, he has been active as chairman of the St. Louis section, the fuels division, the engineers' registration committee, and as national director. He is a member of the Model Smoke Law Committee and the Power Test Codes Committee on Dust Separating Apparatus.

He is a member of Tau Beta Pi, honorary engineering fraternity, and a registered professional engineer in New Jersey and New York. He is also a member of the King's County Chapter, New York State Society of Professional Engineers.

That's Bill Christy for you—a man who just can't stand still! We have given you only the briefest outline of this amazing personality who has done so much for the cause of clean air, and who left his imprint on three most important American communities—St. Louis, New Jersey, and New York.

Cinder Ella, the mannikin which the Cincinnati Post used to promote Cleaner Air Week, created quite a stir. The dust which accumulated on her white dress every day was carefully analyzed. One day she was covered with 2,382,000 particles—a very low count. On the same day a sister of hers was placed in Times Square, New York, and she collected 7,846,920,300 particles—or that's what the Post said anyway!

CLEANER AIR WEEK GOES OVER BIG

Last-minute news regarding the success of Cleaner Air Week can be brought you only because we are late in going to press.

But Charlie Howison and his hard-working committee put Cleaner Air Week over in a big way—more so than ever this year. No less than 21 governors, and the mayors of most large cities and many smaller ones, issued proclamations for the observance of this important week in the lives of Americans.

Charlie, Executive Secretary of the Smoke Abatement League of Hamilton County, began his campaign as early as August. On the local level he tried to keep all three newspapers and five radio stations constantly informed of what was going on in the field of air pollution control.

He and his committee did not confine themselves to city editors alone, but also talked with managing editors, columnists, women's page editors, radio commentators, cartoonists, and whoever else could possibly make a contribution toward insuring the success of the observance.

Cincinnati responded magnificently, and many other cities to whom releases were sent did likewise. In Cincinnati the papers ran four separate feature stories with photos based on projects which Chief Smoke Inspector Charles W. Gruber is working on.

One of the best attention-getters was a daily feature in the Cincinnati Post demonstrating how much dirt there was actually in the air. A mannikin named Cinder Ella was dressed in a clean white dress every day and placed in some prominent location. At the end of each day the dress was carefully removed and taken to a chemical laboratory where tests were made to see how much dirt and grime the model had collected.

The analysis showed that the dirt on Cinder Ella's dress came from thousands of spinning rubber tires, cinder particles, dust, wind-borne pollen, and other particulate matter.

Several downtown department stores and business establishments gave window space for displays of equipment and educational material. One window showed a leaf chopper, plus copies of letters from the head of the park board, the fire chief, and the chief smoke inspector, urging the use of leaves for making compost, instead of destroying them by burning and thus causing a smoke nuisance.

About 600 Cleaner Air Week posters were distributed throughout the Cincinnati district for placement on fire houses, public school and parochial school billboards, libraries, railroad roundhouses and yards, and in store windows. The four leading hotels printed Cleaner Air Week slogans on their menus.

About 1,500 copies of *Cleaner Air*, a pamphlet issued by AP&SPAA stating its aims, were circulated by Charlie and his committee all over the nation. This exhausts the supply, but another folder, entitled *Air Purification*, is available.

Excellent support of the promotion was given by the Pocahontas Operators Association, composed of 25 mining companies who operate in the Pocahontas coal field and supply a major part of the low-volatile, smokeless coal which is used in Cincinnati.

This association ran two advertisements in the Cincinnati newspapers, calling attention to Cleaner Air Week. One of these advertisements reads in part:

"While much has been accomplished, eternal vigilance by all anti-air pollution forces will always be necessary to continue the present excellent progress toward a cleaner, brighter, healthier Queen City."

Honey with a Good Scotch Flavor

An amusing chronicle in which Oscar, the Gas Works Owl, gives good advice until a combustion expert comes to the rescue.

by JOHN RAVEN

who, as everybody knows, is none other than Robert H. Emerick, a consulting engineer in Charleston, South Carolina.

Reprinted from the April, 1951 issue of POWER ENGINEERING.

One morning the Boss called me into his office, and I saw a little guy sitting there with a zipper-mouth, and three unsmiling females likewise with zipper-mouths, and I could tell right away I was in for something not good.

I was in no mood for trouble either, on account of having just come from a session with One-Sock Murphy, who is an ex-pugilist and the meanest fireman in the gas works, besides having recently started to raise an equally mean family of bees.

As usual, I found him sitting on a bench reading something about bee culture, and paying no attention to his oil burners while the smoke was climbing up the sky like a mid-summer thunderhead.

"One-Sock," I yelled, feeling pretty sore at the way he was messing up the boiler, "put down that book and listen. You've got to get rid of those honey-bugs of yours, and I mean quick. Yesterday one bit Greaseball Charlie in the Gas House, and two of them put the hot foot on Pipe Nose Henry's nose. And already this morning Jingles Joe needs salve for one that slipped a stinger into his ear. Everybody's complaining, and what's worse, look at your burners, look at your stack. Smoke, smoke, smoke."

And then I added ominously:

"One-Sock, this has got to stop. And right now. Understand?"

One-Sock laid down his book, carefully marking the place with a plug of tobacco, and then he stood up in an endless unraveling of height and bulk like an elephant heaving to its hind legs. Next he stuck out his ex-pug jaw and from his 12-inch advantage of height addressed me in the following anti-peaceful words:

"John," he rumbled, "I ain't gettin' rid of no bees, see? And if you don't like my smoke, that's tough, because my bees do. They're a-makin' honey with a flavor of gas works smoke in it, like good Scotch whiskey, which I like, see? An' what's more, other people like it, an' I'm goin' to get rich, an' you better get goin' an' stop botherin' me, see?"

He knotted up the pile-driver fist he calls Tom and thumped it significantly against the other piledriver fist he called Jerry, and I backed off remembering that one sock from One-Sock had broken more than one opponent's jaw.

"And so," he mused, like a bull meditating new deviltry, "tell them bums to stop sockin' my bees before I start sockin' 'em too. I don't like my pets gettin' socked, see? Now beat it. Git."

I got, reflecting sneeringly if there was

one guy in the gas works who could prove Oscar the Owl is not as smart as he thinks he is, that guy is One-Sock Murphy. I pulled out of my pocket Oscar's latest lofty henscratching of advice which read thusly:

njuneers would get along better by tryin 2 like people as well as they like machinery 4 instans u can like anybody if u look him in the i n say i like this guy n right away u bgin 2 c his good points its ezy n it works ur frend oscar the gas works oul hoo cs all n nos all

"Nuts!" I said right out loud. "Nobody could like One-Sock Murphy no matter where you look at him."

I tore the note into little pieces and shuddered to think of my position when the Boss saw that mountain of smoke spreading steadily across the sky. Probably he would give me ten minutes to stop it or be fired, and if I tried to stop it, One-Sock Murphy would knock my head off. This was the situation when I came in sight of those zipper-mouthed faces in the Boss' office. They looked like a fancy collection of fatal accidents, waiting to happen to me, and with the Boss acting as trigger-man.

"John," began the Boss, his voice shaking with the emotion of an outraged benefactor, "after all these years, how could you do this to the gas works? Don't you realize that by pouring smoke and smells into the sky, you have forced these charming visitors from the Ladies Association for City Improvement, to consider taking out an injunction against us? After the way I have trusted you to keep our glorious skies clean and pure, what have you done? You have brought the gas works to the very verge, to the razor's edge, of being shut down by the law."

He leaned back in his chair, his three chins quivering, and actually wiped the corner of one eye. He would do credit to Hollywood, the big bag of wind.

"But Boss," I said, starting to get mad at being made the goat, "how about the water gas house, and the coal gas house, and the stills? What they put into our glorious skies is —"

"Stop!" he bellowed. "I won't have excuses added to your failure. I ought to fire you on the spot! Now! However, the Ladies Association, to show their cooperative spirit, have brought along a combustion expert who will give instructions, personally, to every fireman in the place, on how to mix oil and, ah, how to adjust things. The injunction will be held in abeyance, to give us a chance to clean up. And now, will you please show this gentleman around the works, and help him to get started."

I looked at the little guy who bowed slightly, and I had a vision of One-Sock Murphy chasing him right out the gate, thereby bringing on a fast injunction that would raise a terrific public stink at best, and shut us down at worst. In either event my name was mud. I might as well quit now and get it over with.

"Boss," I actually began to say the fatal words, when I was interrupted by a bee that sat down on the Boss' left cheekbone and proceeded to ram a stinger into him with tremendous enthusiasm.

The Boss jumped up with a yell like he'd been hit by a General Sherman tank.

"Bees," he howled, slapping the poor thing to death. "They're swarming! Damn it, John! Do something. They'll kill us."

"Boss," I said, "Open your eyes. They're not swarming. There's only one, and he's dead."

He sat down mopping his cheekbone with a handkerchief, and had a quick peek at the three female accidents who were regarding him as though eager for the next act. He obliged them immediately. He stabbed at me across the desk with a big fat finger. His three chins shook.

"If you handled your department as you should," he bellowed, "we wouldn't have bees in the gas works. Supposing the brute had bitten one of our visitors? Suppose it had been a swarm? We might be lying on the floor now, dead. Don't you know bees can kill a man? John, you go at once and see that Murphy gets his bees out of the gas works right away, today. If I see a single bee around here tomorrow, you're fired. Is that clear?"

The little guy unzipped his gums for the first time.

"Bees in the gas works?" he said, standing up. "Interesting, sir," speaking right at the Boss, "the presence of these bees may have real scientific value. If they are making honey, it may prove that gas works fumes actually are healthy. May I see these hives?"

"John," ordered the Boss, "Show him the hives. Of course the gas works is healthy. Odorous, perhaps, but healthy."

Before I could figure out what to say next, the little guy had me by the arm and we were heading for One-Sock Murphy, mayhem, assault, battery and sudden death.

"Mister," I said, "this One-Sock Murphy is a very quarrelsome character indeed. Can't we just study bees in the library or somewhere? Don't you think we are too young to die?"

"I've never yet seen a fireman I could not like, or couldn't handle," he said complacently. "Let's have a look."

I led him into the boiler house, concluding I might as well get it over with, especially since he obviously was crazy.

The smoke was still pouring from the stack like an active volcano, One-Sock was still on the bench and reading about bees.

When he saw me, One-Sock threw down his book and hollered: "Didn't I tell you to stay out of here and quit botherin' me? I think I'll bust you wide open, see?"

One-Sock started toward me waving Tom and Jerry like a couple of pile-drivers on the loose. I put up my own fists and felt discouraged right away, seeing how puny they were compared to Tom and Jerry. And then unexpectedly the little guy stepped between us and he had an old scoop left over from the coal firing days, all poised above his right shoulder.

"Hold it, Murphy," he said. "I know all about you and your glass jaw. One more step and I'll lay you out for a week.

One-Sock pulled up, looking surprised.

"You know me, mister?"

"Sure, I've seen you fight many times. If you had a better jaw you'd have been a champ. Now I'm interested in your bees, and I want to taste your honey."

One-Sock grinned and somehow surprised me by looking almost human. The little guy threw his scoop into the corner and I dropped my fists. Then One-Sock scowled again.

"I got good honey," he said sullenly, "flavored with smoke, like Scotch whiskey. But John doesn't like my bees. He says I got to get rid of them."

"No wonder," said the little guy. "You've got the wrong kind. What you want are the gentle Italian bees, that won't go around stinging everybody in the place. And besides, you're smoking up the city and messing up the boiler for no good reason at all. That smoke is too high to affect the flavor of the honey, and all it does is make everybody sore."

He went over to the burners and adjusted them while One-Sock looked on without a peep. "Murphy," he said, "it's your job to run this boiler plant the best you know how, and to raise bees the best you know how. You can be a champ at both jobs, because your glass jaw doesn't matter. Now, let's go see the hives, and give me some honey with that good Scotch flavor, for the Ladies Association for City Improvement. We've got to smooth 'em down."

One-Sock looked at me and grinned again.

"John, this guy knows things. Wanta see the hives, too?"

"Sure," I said, and I really did. "And how about some honey for me?"

That night I put out two mice for Oscar. For an owl, he certainly understands people.

Television Used to Control Smoke

Water-cooled windows, through which combustion operations inside furnaces may be watched, have been installed in the Port Jefferson plant of the Long Island Lighting Company near New York, according to a recent issue of the New York *Times*.

"Advantages gained," said that paper, "are prevention of boiler explosions before hazards can become critically serious, and marked improvement in smoke control."

L. M. Exley, superintendent of the Port Jefferson plant, conceived the idea of using an industrial-type television set to observe directly the processes of combustion in his plant's huge boilers.

First tests were made last year, and, after overcoming some design problems, a permanent installation was completed this year. Now it has been decided to continue using television devices on the Port Jefferson boilers, and also install them in the new Glenwood power station to be completed in 1952, and in the new Far Rockaway station, ready for operation in 1953.

The reason observations inside the boiler help operators control smoke is that changes in combustion which might create more smoke can be seen the instant they occur.

Without such observations, operators would have to wait until the smoke is-sued from a stack, resulting in a much greater time lag before controls could be adjusted to correct incomplete burning of fuel.

Flash!

The lapel pins with the AP&SPAA insignia, mentioned in President Hodges' report (Page 4), will be ready for ship-ment on January 24, 1952. Order yours now at $3.88, tax included.

Montreal Minutes

Minutes, as well as Proceedings, of the Montreal Convention of 1950 were mailed out to all members in good standing. The Secretariat has been advised that some members have not received their copies. A limited number are still available. Write for your copy to the Executive Secretary.

Your Executive Secretary

Robert T. Griebling, who was appoint-ed Executive Secretary when the Air Pollution and Smoke Prevention Associa-tion of America moved its offices from Chicago to Pittsburgh early this year, is a native of Milwaukee and a graduate of the University of Wisconsin, class of 1923.

He worked on a number of eastern newspapers for five years after gradua-tion, and then became associated with the Aluminum Company of America in Pittsburgh. He has been a Pittsburgher ever since.

At the Aluminum Company Mr. Griebling did advertising, sales, sales pro-motion, and public relations work. He subsequently took a position as an ac-count executive of a public relations agency, then served as Director of Pub-lic Relations of the Allegheny County Sanitary Authority, which was founded in 1946 to study the stream purification problems of the Pittsburgh district.

Before joining Mellon Institute as a Fellow, Mr. Griebling did public rela-tions work for the American Radiator & Standard Sanitary Corporation. Like most people, he rides a hobby, which he changes every now and then. At the present time he likes to restore old fur-niture and collect books on the Napo-leonic period.

"Columbus Air Pure," boasts Gloria Swanson

There's no doubt about it, Gloria Swanson is Harry Ballman's favorite ac-tress.

Coming into Columbus while the Ohio State Fair was in progress, she comment-ed on the good clean air she was breath-ing there.

"The moment I smelled this Columbus air I felt invigorated," she told report-ers. "It has oxygen in it."

That was a good pat on the back for a division whose efforts are so often un-appreciated. Here an out-of-towner made public mention of the fact that the Divi-sion of Smoke Regulation was doing a good job.

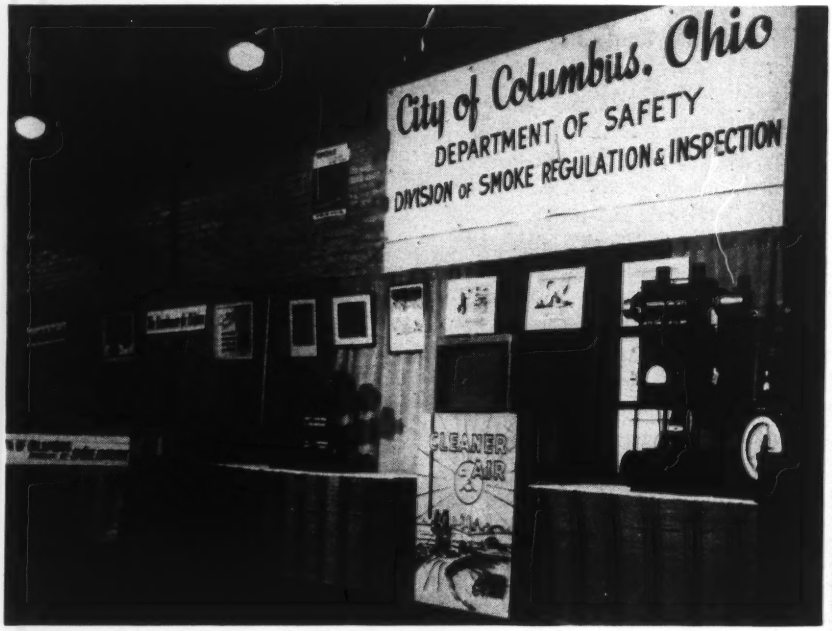
That this is so may further be seen from the enthusiasm with which the divi-sion's booth at the State Fair was visited. Harry Ballman estimated that about 50,000 persons saw the exhibit. There were 11,621 who actually stopped at the booth and studied the display, and mem-bers of the division gave interviews to more than 500 who requested informa-tion and advice.

Glorious Gloria

About 2,000 copies of "What the Air Pollution & Smoke Prevention Associa-tion is doing for Air Purification" were passed out to people who seemed more than usually interested. Copies of this folder are available from the Executive Secretary for similar purposes.

Harry Ballman's unqualified thanks went to Gloria Swanson for the plug, but he also had some good words to say about the people in his division who ar-ranged such an interesting exhibit.

This attractive booth at the Ohio State Fair caught the eye of thousands of visitors. It was designed to publicize the work of the Columbus Division of Smoke Regulation and In-spection, and shows, left to right, a unit to demonstrate the effect of a draft control device when draft on a chimney is either excessive or inadequate; a projector for showing slides connected with air purification activities in Columbus; an overfire air demonstration on an oil-road torch fired under a smoke indicator of the electric eye variety and tied in with a smoke recording device at the far right. Some of the illustrations and cartoons were adapted from CLEANER AIR, *an AP&SPAA booklet telling about the aims of the organization.*



Penney Receives Award for Work with Air Cleaner

Gaylord Wallis Penney, holder of the George Westinghouse professorship of engineering at the Carnegie Institute of Technology, Pittsburgh, was voted a John Price Wetherill medal by Franklin Institute, Philadelphia, for his development of a fundamentally new type of air cleaner. The date of bestowal is October 17.

Such a precipitator cleans air to protect delicate apparatus or processes, cleans air in home and office, cleans air for the relief of hay fever and asthma, and reduces damage to merchandise in stores. Commercially available electrostatic air cleaners used in connection with heating furnaces have shown a marked reduction in household cleaning in locations where atmospheric pollution is serious.

Applications Originally Limited

Previous to Professor Penney's work, the application of electrostatic precipitation to other than special industrial use was limited because of high D.C. voltages (30,000 to 100,000 volts), large space requirements, the generation of too much ozone, and high initial cost.

Penney successfully developed a precipitator of a relatively small size operating on 12,000 to 13,000 volts, and utilizing a fine wire ionization unit which permits operation with a very small and tolerable ozone generation.

Professor Penney is a native of Iowa. After serving his country in World War I he was graduated from Iowa State College. He came to Pittsburgh and received his master of science degree from the University of Pittsburgh. Even before completing his work there, he began his long association with the Westinghouse Electric Corporation, where he developed the precipitator for which he is being honored this month.

During World War II Professor Penney worked in a civilian capacity with the Atomic Energy Commission, the Office of Scientific Research and Development, and the United States Army. He became George Westinghouse Professor of Engineering at Carnegie Institute of Technology in 1947.

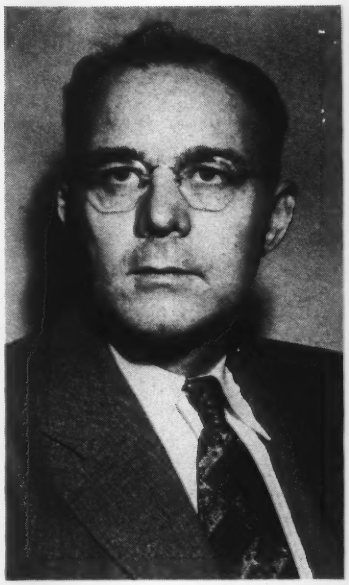
Professor Penney is the author of many technical papers dealing with heat transfer, commutators for direct current machines, and electrostatic phenomena, as well as dust precipitation. He is a fellow of the A.I.E.E. and holds membership in Tau Beta Pi, Phi Kappa Phi, Sigma Xi, Eta Kappa Nu, the American Physical Society, the Society for the Promotion of Engineering Education, and the American Society of Heating and Ventilating Engineers.

The Franklin Institute

The Franklin Institute, which gave the Wetherill award to Professor Penney, is 127 years old, and was founded for the purpose of creating an institution where anyone, rich or poor, young or old, could obtain instruction in the mechanic arts and allied subjects. At the time of its founding there were as yet no technical colleges, no vocational schools, nor any high schools. The sole dispenser of technical education in Philadelphia was the Mechanics Institute, and this was accessible only to those who had been apprenticed to a trade. A number of learned societies also existed in the city, but membership in these was restricted, and the members largely ignored the practical application of the sciences they discussed.

This deficiency in educational facilities was vividly brought home to Samuel V. Merrick, a young man who had been given the opportunity to enter a small manufacturing business. He desired to obtain the mechanical training required for the successful management of his business, and found to his dismay that no means existed unless he became indentured to someone already established in business.

He called meetings, and, after an initial rebuff, he and his ideas were enthusiastically received and the project was under way. Professional men, manufacturers, and artisans were interested in the new venture, and among the first 20 names of applicants for membership were those of merchant, baker, fire engine maker, brewer, teacher, plasterer, shot maker, plumber, saddler, marble mason, clothier, counsellor-at-law, and blacksmith.



Prof. G. W. Penney

Classes were started in April, 1824, and lectures were given concerned with reports of the latest development in science. These lectures, carried on to the present day, constitute a valuable record of progress during a century in which man made greater advances than in any similar period of his existence.

The Institute also inaugurated the custom of holding trade exhibitions as a suitable means of drawing inventor, manufacturer, and consumer together in closer relationship. The first such exhibition featured, among other things, blister steel and grass bonnets, japanned goods and broadcloths, bar iron and carpets.

The Franklin Institute High School was established for earnest young students who found the instruction furnished in the free school system inadequate for their needs, but who were not yet capable of benefitting from more advanced Institute lectures.

Pollution Studies Made

As the Institute grew, so did its responsibilities. Philadelphia's City Council asked the Institute to study the best method for paving streets. That was in 1843. Thirty years later the Institute was invited to appoint a commission of five scientists and practical engineers to investigate the pumping stations and reservoirs upon which the city depended for water.

In 1880 another commission was appointed to study the future needs of the rapidly expanding city, and to make recommendations to prevent the waste of water. One striking feature of the report was the recommendation to install meters to measure the volume of water consumed, so that the main consumers of water might be charged their appropriate share of the water supply cost.

"Solicitude for the public health," a Franklin Institute booklet states, "is reflected in the investigations made into the pollution of the Schuylkill River and into the smoke nuisance, now that smokestacks had become a familiar feature of the city landscape."

During the past year the Institute conducted a study of air pollution caused by industrial fumes and odors in a heavily industrialized section of the City of Philadelphia. This project was undertaken jointly for the City Planning Commission, the Redevelopment Authority and Division of Air Pollution Control by by appropriation from City Council.

The Institute also checked the suitability of domestic use of petroleum oils as illuminants, tested the first dynamo, and studied fire hazards, thus demonstrating that it was actively employed for a long time in making a growing city cleaner, healthier, and safer.

New Facilities

The features of the Institute which are best known and have found the loudest expression of approval are the Fels Planetarium and the museum. The museum introduced to America a new phase of visual education. It furnishes a comprehensive survey of science and its numerous applications in everyday life. Through generous donations the Institute has become the custodian of some famous historical apparatus, including equipment used by Benjamin Franklin, Faraday, Priestley, Edison, Elihu Thomson, Fleming, De Forest, and Zworykin.

NOTICE

Ask Headquarters for your copy of *Air Pollution, a Problem of the Process Industries,* written by A. G. Christie, Professor Emeritus, Johns Hopkins University, Baltimore, and reprinted from the July issue of MECHANICAL ENGINEERING.

CINCINNATI'S STUNT

The gold star for perfect attendance is Sunday School's most coveted award. And the Navy "E", denoting a job well done, is not only cherished by Navy personnel, but also by all industry able to qualify.

Now comes the White Ring, which Cincinnati calls its Badge of Merit, and which may eventually mean as much to industry as the "E" does now.

The White Ring which the Cincinnati Bureau of Smoke Control allows plants to paint on their stacks in compliance with anti-smoke legislation can well be adopted by other cities who want to let people know how well their smoke ordinances are being observed.

Charles W. Gruber, Chief Smoke Inspector, tells it this way:

"Nothing stands out like a sore thumb more than a chimney discharging black smoke. Public wrath descends upon both the smoke official, for permitting this violation, as well as upon the owner of the offending plant.

"As a result, the official goes to work on the offender and gets his cooperation, willingly or otherwise. One more cause of smoke is eliminated—another plant is cleaned up. Mrs. Neighbor can hang out her wash in the beautiful clear atmosphere and never give a thought to the everlasting struggle going on. She is unaware of the constant endeavor in boiler plants to keep equipment, fuel and operation in harmony so that the smoke inspector stays away!

"We feel, however, that the plant owner should let Mrs. Neighbor know what he is doing to comply with the regulations, and so a suggestion was made a few years ago which was enthusiastically taken up by a number of firms interested in smoke abatement."

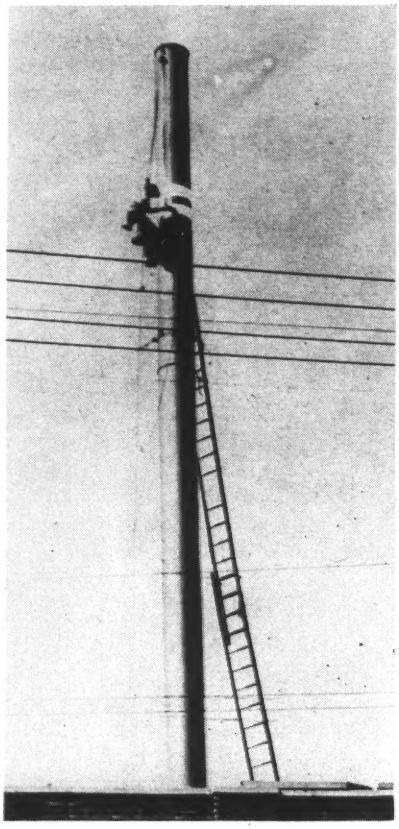
The Bureau suggested painting a white ring around the stack for every year in which the firm complied with the ordinance. Breese Brothers Company, manufacturers of steel chimneys, were the first to do so. Three years ago during Smoke Abatement Week—now called Cleaner Air Week—they painted their first ring.

Last year Breese Brothers qualified for Ring No. 2, and this year the firm hopes to qualify for a third ring. Breese Brothers, incidentally, are very much interested in the campaign because a white ring, or a series of them, improves the appearance of their product.

Other plants that have painted the White Ring on their stacks in the Cincinnati district include Berhausen Chemical Company, the Cincinnati Post, the Cincinnati Gas & Electric Company, and the Eagle Savings & Loan Company.

"Our goal for Cincinnati," Charlie Gruber concluded, "is a white ring for every plant, and a ring for every year, so that we will eventually have a City of White Chimneys!"

Steeplejack applying the second white ring to the stack of Breese Brothers Company in Cincinnati. A third will go on at the end of the month. Each ring signifies a year of compliance with Cincinnati's air purification ordinances.



Salvaging Waste from Atmosphere Often Profitable

Many Instances Cited in Los Angeles District by Gordon P. Larson

The article entitled "Smog—Resource or Nuisance?", which appeared in the July issue of *Western Industry*, presented an interesting picture of the possibilities inherent in picking up extra dollars while cleaning the air of pollutants.

It was written by Gordon P. Larson, Director, Los Angeles County Air Pollution Control District, who is a Director of our Association. Permission to quote widely from the article has been granted by the editors of *Western Industry*.

He cites a number of fortunate examples where direct profits have resulted, either by recovery of valuable materials or by improvements in processing, which came about because industry was compelled to control its atmospheric emissions. As a rule, he stated, industry is anxious to reduce pollutants, and is aware that to become a public nuisance is to place its interests in jeopardy. The editor supports this statement by commenting on the fact that reasonable control of industrial wastes is a necessary operating expense, and industrialists recognize their responsibility as citizens.

Mr. Larson says:

Industrial pollution has obviously not been planned, it has merely developed with the growth of cities. Industry has endeavored to be judicious in the location of plants. In past years factories, with great care, have been purposely established in outlying districts so as not to create disturbance in nearby communities. Zoning requirements have been designed to foster proper land usage. However, residential areas have gradually enclosed these plants and often an over-all pollution problem has developed as a result.

Now industry must cope with a situation not entirely of its own making. To meet the problem squarely requires the expenditure of considerable funds, but what can industry hope to gain in addition to clean air? There are situations whereby directing attention to need of air pollution control the research and developments have resulted in finding processes that produce more or better products or in finding markets and values in the stack discharges.

Aerial view of Los Angeles with its pall of smog.

Sulfur in Waste Gases

Hydrogen sulfide, inherent in refinery gases, produces sulfur dioxide when these gases are burned as fuel. Research by the petroleum industry determined that these waste gases could be stripped of hydrogen sulfide which then could be converted to valuable sulfur and sulfuric acid.

The major oil companies in the Los Angeles district are not only now selling their hydrogen sulfide to chemical companies, but also derive the operating benefits from burning the cleaned refinery gases. One such chemical company produces over 80 tons of sulfur daily from these sources. Maintenance costs, formerly imposed by corrosion on heaters, stacks, and lines, have been reduced to a minimum.

In connection with this process, some oil companies were confronted with ammonia as a major impurity, which prevented them from collecting hydrogen sulfide for chemical companies. They thereupon processed the mixture, using their acid sludge to form ammonia sulfate and release hydrogen sulfide for sulfur recovery.

Cost and Odors Reduced

The pressure for odor control resulted in three Long Beach fish canneries installing low-pressure gas dehydration equipment to eliminate release of odors to the air. While the cost of each unit varied between $12,000 and $25,000, and power had to be increased as much as 10 per cent, gas consumption was cut as much as 10 per cent and maintenance costs were actually reduced.

All three companies report a general improvement in the quality of their fish meal. As much as 15 per cent more salable material is recovered with the new process. One firm now realizes an increased value of $4.80 a ton in its fish meal because the protein, vitamin B_{12} and lysine content is higher. Another concern recovered its $13,000 expenditure for low heat dryers in one year.

Heat Conserved, Smoke Reduced

Though tests by the Air Pollution Control District failed to disclose violations at a brass foundry, the company went to work on its pollution discharges without benefit of an engineering or research department.

Altering the firing system saved considerable fuel and the horsepower of fan motors was increased to control fume discharge. New sleeves were inserted be-

tween burners and furnace openings to conserve heat and reduce smoke.

The foundry abandoned the charging of scrap because costs for removal of foreign material to avoid excessive smoking could be eliminated and furnace capacity could be increased by using ingots. Considering the time and costs saved with the use of ingots, the operators report as profitable an operation and greater satisfaction with the cleaner method.

Use of a new pre-baked oil as a core binder cut baking time more than 25 per cent on the average and greatly reduced visible smoke from core ovens. Management, personnel, and nearby residents were much gratified with the improvements initiated through the enterprise of this company.

Gold in the Dust

At a cost of $3,500, a paint company installed fume burners on its varnish cookers and greatly increased the efficiency of its personnel when the irritating fumes were thus reduced.

Many foundries, ferrous and non-ferrous, are promoting extensive research to ascertain what of the materials they can collect from their stacks will have market value or will be useful in their respective operations. Tons of substances, formerly lost to the air, are recovered daily and it should be but a question of time until engineering and marketing efforts develop the utility of these potentially valuable compounds.

An operator of one gray iron foundry dusted his lawn with material from the plant baghouse and was surprised to see his grass sprout quicker and thicker than ever before.

A recent baghouse collection system at a gray iron foundry operated at 98 per cent efficiency during tests. A large percentage of dust and fumes collected was less than one micron in particle size. Equipment of this magnitude costs about $25,000, however, baghouses for smaller processes run as low as $500 and may reach $10,000. Electrical precipitators are more expensive. One steel company is setting up four units for large operations at a total cost of approximately $650,000.

Over 50 per cent of the substance recovered in secondary lead smelting collection systems is lead oxide which may be sold or recharged to furnaces. This material amounts to as much as 1,000 lb. a day in large plants. A zinc smelting engineer maintains that up to 50 per cent of the material collected at his plant will eventually yield pure zinc when a treating process is completed in the near future.

Investments Come Back

A gray iron foundry manager claims that maintenance and operation expenses on the plant's baghouse have been so minor that the accounting costs to determine the increase would exceed any amount added to the cost of unit production. Some large foundries are able to reduce fuel costs effectively with the air of heat exchangers. Control devices on many processes are too new to determine cost figures, but the elimination of objectionable, ever-present smoke from the stack is a definite public relations benefit.

Fines recovered from perlite popping operations are ordinarily combined with the principal products, plaster, plasterboard, and poured wall sections, but they are also sold as inert carriers for soaps, detergents, and paints. As a paint filler the substance is excellent and withstands temperatures near 1,600°F.

Activated bentonite clay, used in the catalytic cracking of crude oil, is an important commodity which one clay company learned it had been losing to the air in quantity. An efficient collecting system now recovered enough clay fines to market a high-grade contact catalyst for the decolorization of fatty acids and oils.

A paint firm invested over $7,000 in fume collection equipment on its varnish cookers and now recovers two or three 42-gal. drums of fatty acids a week.

Recovered Fines Add Up

At a cost of $8,000 a mineral processing company installed equipment to collect fines lost in its grinding operations and hoped to write off the expenditure in two years at the earliest, but the recovered dust proved to be of such exceptional quality that it now brings $5 a ton more than the main product. This control process alone grosses over $25,000 a year and has led to expansion of the main plant in both basic and control equipment.

Over 1,400 pounds of feed a day were being lost by a grain mill before collection equipment was procured. The recovered fines are now mixed with the main feed and production costs cut appreciably as a result.

An alfalfa mill owner was surprised to learn that cattle he grazed behind his elevators preferred alfalfa fines to their usual diet of hay and molasses when the two were placed side by side. When tests at one mill revealed that the protein content of its fines was higher than the regular product, a dry baghouse system was installed to replace a wet scrubber in order to make use of the material. Other operators market their fines for the making of alfalfa tea, a health food.

Careless operation of incinerators has resulted in loss to many organizations. A metal heat treating and casting company had carried its incinerator as a liability until it decided to replace the laborer handling it with a higher paid plant operator. The new man immediately set about determining what materials then being destroyed had salvage value. In a month he produced a profit twice as great as his salary and the ashes hauling costs combined. Grocery chains have capitalized on salvage sale versus incineration. One company receives as much as $50 a month per store for their waste materials.

Similarly, many woodworking plants burn hardwood chips and sawdust, unaware of the demand for these materials in the smoking of meats and fish. One mill sells its wood chips and sawdust to paper and plastic manufacturers and thus eliminates incineration costs as well.

Progress Outpaces Regulations

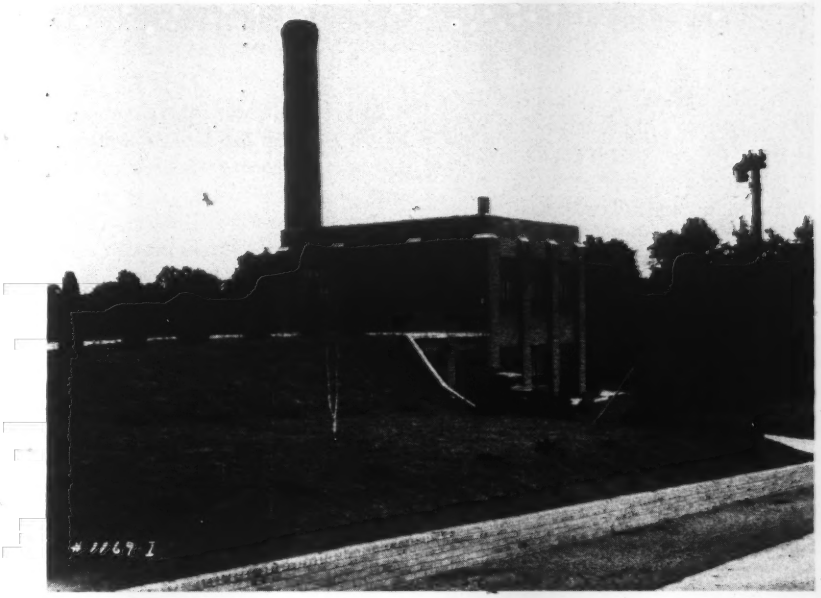
It is not accurate to say that all benefits of collection systems are directly attributable to conformity with air pollution control regulations. Rather, many advances have grown out of the realization on the part of industry that pollution of the air, whether unpleasant to the smell, irritating to the eyes, damaging to the crops, injurious to rubber or haze-producing, is an evil in and of itself and sooner or later must be met. Fortunately, many industries have chosen to do their reckoning sooner and, even now, are engaged in independent research on the methods of reducing pollutants.

Because it is impossible to alter the natural conditions which trap smog in the Los Angeles basin, it is necessary to restrict pollutants entering the atmosphere at their sources. These severe me-

teorological conditions have necessarily made air pollution control regulations in Los Angeles County more stringent than anywhere else in the world. Realizing this, local industries have been most cooperative in controlling emissions and have been greatly gratified with the beneficial by-products derived from these operations.

Clean Air, Free Enterprise

The District has the responsibility of assuring the public that no pollution shall go into the atmosphere that is within the ability of engineering knowledge to control. The California Health and Safety Code which enables the District to perform this vital public service is reasonable and fair to all. It provides the machinery to accomplish a job that must be done to insure a better place in which to live and work. The entire district believes that clean, pure air must be as unobstructed as free enterprise.



Incinerator need not be an eyesore in the community. Photo courtesy Pittsburgh-Des Moines Steel Company.

UP THE CHIMNEY

by THOMAS C. WURTS
Director
Allegheny County Bureau of Smoke Control

Reprinted from the May, 1951 issue of *Charette*, official publication of the Pittsburgh Architectural Club, the Pittsburgh Chapter, A.I.A., and the Pennsylvania Society of Architects.

Everyone has a more or less intimate acquaintanceship with the wire basket that sometimes sits in the corner of the backyard where rubbish is burned. Everyone is also familiar with the fact that, whether it be rubbish burned in the backyard or autumn leaves burned at the curbstone, the smoke seldom goes into the window of the person who is doing the burning and almost invariably bothers the neighbor and may result in a back-fence squabble.

In an effort to alleviate this situation, some private homes, apartment houses, hospitals, etc., have built or installed "incinerators." The quotation marks are intentional as in many instances the nuisance of the backyard basket has only been transferred from the backyard to a device which burned the rubbish, and frequently garbage, improperly, with the result that smells and fluttering semi-burned pieces of paper were distributed in the neighborhood.

Proper incineration on the other hand is the best method known today for the proper disposal of waste paper, garbage and all combustible wastes. The device in which this is done must, however, be designed with extreme care, otherwise the desired result will not be accomplished.

In the design of an incinerator there are four cardinal principles that should be observed:

1. Wet, soggy garbage or other similar wastes should be placed in the incinerator and given an opportunity to at least dry partially before active combuston is started.
2. The temperature maintained in the combustion chamber must be sufficiently high (1500 to 1800°F.) to insure the combustion of all organic matter.
3. A secondary combustion chamber, preferably with an auxiliary gas burner for the purpose of igniting and completely consuming any organic gases or smoke which may be distilled off of the refuse in the combustion chamber.
4. A large expansion chamber with reversing walls for the purpose of:
   a. reducing the velocity of the products of combustion to a very low value.
   b. causing the products of combustion to reverse direction.

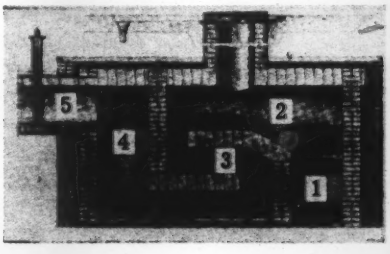
This secondary chamber is for the purpose of effectively dropping out all fly ash or particulate matter and preventing it from being emitted into the atmosphere.

Another most important feature is that the stack from which the gases of combustion are emitted into the atmosphere should be of sufficient height that none of these gaseous or solid products will be emitted at such a level as to have a tendency to enter into the windows or onto the property of others.

Figure No. 1 shows a cross section of a typical incinerator having all of these features:

1. Ash pit.
2. Primary combustion chamber, including a sloping surface primarily used for drying out wet garbage.
3. A chamber for secondary combustion.

Cross section showing component parts of incinerator. Courtesy American Incinerator Corporation.



4. The settling chamber. Note the several doors or openings for the removal of fly ash.
5. The outlet to the breeching or flue.

The location of the incinerator, particularly in the case of apartment houses, is an important matter. The charging doors or chutes should be located so as to be convenient for those having waste matter to dispose of. At the same time the ash pit door, as well as the fly ash clean-out doors, should be so located that the janitor or other attendant can readily remove the ashes and fly ash. This latter is important inasmuch as it is quite common that the weight of ash residue will run between 30 to 35 per cent of the total *weight* of waste *matter* charged into the combustion chamber. It is of further importance that the janitor regularly remove the fly ash from the settling chamber in order that it will not accumulate. Such accumulation would restrict the gas passage resulting in higher velocity of the gases of combustion and a tendency, on account of this increased velocity, to carry on through the fly ash which the settling chamber was intended to catch.

There has been a tendency in the past, particularly in the case of apartment houses and hospital installations, to have a single combined chute and flue. Such a design is entirely unsatisfactory. This is for the reason that it is impossible to properly design the incinerator itself to remove fly ash and completely consume all distilled gases and vapors. Furthermore, there is a very definite tendency for such fly ash, obnoxious vapors, etc., to enter into the various departments or floors through the disposal inlets into the flue.

Municipal or commercial incinerators, when properly designed, should not themselves be any nuisance to a neighborhood, and, provided proper garbage and rubbish wagons are used, there should be no reason for complaining or resisting the location of an incinerator plant. The incinerator should be so located that the garbage and rubbish can be readily dumped inside the building in proper receiving bins and can be taken care of expeditiously to prevent any line-up of waiting garbage wagons on adjacent streets. Due consideration should also be given to the disposal of the ashes. If *complete* combustion has been attained in the incinerator unit, such ashes even when wetted down should be practically odorless.

Serious consideration should be given, where at all possible, to providing sufficient area around the building to permit attractive landscaping of the incinerator plant grounds.

In the past there have been many units sold under the name of incinerators which did not meet modern requirements. Smoke Control Bureaus throughout the country are up in arms at the type of some of the installations made in the past and are refusing to approve any units used for the disposal of waste, garbage and rubbish of any kind unless such units are properly designed and installed to meet the fundamental principles outlined earlier in this article.

STANDARD INCINERATOR CODE PROPOSED BY NEW COMMITTEE

The Municipal Code Committee of the Incinerator Institute of America recently completed discussions on a proposed incinerator code.

This proposed code has been submitted to the Incinerator Committee of the Air Pollution and Smoke Prevention Association of America for consideration. The Municipal Code Committee, whose chairman is Ellis E. Smauder, President of the American Incinerator Corporation and a director of APCSPAA, stated that full cooperation should be given to the APCSPAA Incinerator Committee.

The code, as submitted, was prepared by D. L. Germaine and C. Geoga, members of the Engineering Department of the American Incinerator Corporation, Detroit, under the direction of Mr. Smauder. It reads as follows:

Fuel Analysis

The basis for satisfactory incinerator operation is the proper analysis of the fuel to be destroyed, and the selection of proper equipment to best destroy that particular fuel. As a matter of convenience, all types of waste to be destroyed have been classified as follows:

Type 1 Fuel.—Rubbish, consisting of 75 per cent dry combustible waste and moisture not to exceed 25 per cent by weight. The term "rubbish" means fuel made up of combustible waste such as paper, rags, scrap wood, cartons, floor sweepings, and by-products of industrial waste from manufacturing operations.

In commercial operations, it consists of all wrapping waste and offal from such operations. The 25 per cent moisture represents normal moisture content in dry waste materials. Type 1 fuel is based on not more than 8,000 Btu per pound, having 10 per cent ash and 65 per cent fuel. Secondary auxiliary fuel is required in this type.

Type 2 Fuel.—Garbage, consisting of 65 per cent wet materials and 35 per cent dry materials. The term garbage means fuel made up of food wastes and spoilage from hotels, restaurants, hospitals, markets, and like installations.

Seventy-five per cent of the wet materials is moisture, and 35 per cent of the total load is rubbish containing up to 25 per cent moisture, ash, and noncombustible eight per cent as charged. This type of fuel has 5,000 Btu per pound as fired. Auxiliary fuel must be provided with Type 2 fuel, both primary and secondary.

Type 3 Fuel.—Refuse, consisting of an even mixture of rubbish and garbage. This type of waste is common to industrial, commercial, and institutional installations combining accumulation of combustible waste and garbage from cafeteria and food preparation work. Auxiliary fuel must be provided for Type 3 fuel.

Type 4 Fuel.—Human and animal remains, and pathological waste which require primary and secondary auxiliary fuel as dictated by individual job analysis.

Type 5 Fuel.—By-product waste, gaseous, liquid or semi-liquid, noxious or contaminated, of density and viscosity that will be burned through air or pressure atomizing burner equipment. Btu values must be set on individual materials to be destroyed.

Type 6 Fuel.—By-product waste, semi and solid, toxic or otherwise, to be direct charged on hearth, or refractory crucible.

Classification of Incinerators

Class I.—Residential, one- or two-family units, basement fed, wall and portable, brick set hopper or direct fed.

Normal disposal of Type 3 fuel.

Class II.—Apartment and multiple dwelling, flue fed. Normal disposal of Type 3 fuel.

Class III.—Commercial, business establishments, portable direct fed, or brick set destructor type, designed for either Type 1, 2 or 3 fuel, as demanded by particular occupancy.

Class IV.—Industrial heavy-duty destructor type, normally destroying Type 1 fuel in varying quantities.

Class V.—Institutional, heavy-duty, brick set, normally using Type 2 fuel.

Class VI.—Municipal, destructor type, destroying Type 3 fuel in large quantities.

Class VII.—Crematory and pathological units, normal destruction of Type 4 fuel.

Class VIII.—Retort type equipment, designed for specific by-product waste fuel, Type 5 or 6.

Building Code — Incinerators

Section 00.00 Incinerators.—All dwelling units hereafter erected shall be equipped with incinerator, Class I, built-in cabinet type, portable or brick set. Capacity requirements, 15 lb. per hour up to 26,000 cu. ft. dwelling, 25 lb. per hour for dwellings of more than 26,000 cu. ft. capacity.

Built-in incinerators to have cabinet sides and top of metal, insulated and lined with fire-resistant materials, and surrounded by not less than 4 in. masonry walls on sides, back and top. Incinerators exceeding 15 lb. capacity shall be as described, with not less than 1½ in. refractory lining. Brick set units to be lined with not less than 4½ in. refractory laid in fire clay, with minimum ½ in. air space between firebrick and exterior 4 in. masonry.

Flue requirements: basement fed up to 15 lb. capacity, 8 in. x 12 in. terra cotta or equal for incinerator, heating plant and water heater vent. Over 15 lb. capacity, a 12 in. x 12 in. flue is required.

A spark arrestor ½ in. mesh must be provided between the incinerator and the point of outlet of the furnace smoke pipe. Type 3 fuel to be destroyed requires auxiliary burner in primary chamber and fume burning chamber.

Section 00.01 Flue Fed Incinerators.—All apartment and multiple dwellings shall be equipped with incinerators, Class II. Flue fed equipment requires separate flue for incinerator use only.

Basement installation to be brick set construction, 4 in. thick up to 9 sq. ft. burning area, 8 in. thick for burning area over 9 sq. ft., lined with 4½ in. of refractory laid in fireclay. Minimum flue size up to and including two stories, 16 in. x 16 in., up to six stories 20 in. x 20 in., over six stories, 24 in. x 24 in.

Self-closing hopper doors at each floor, daylight opening not to exceed one-third cross-sectional area of flue. All flues on Class II incinerators must be refractory-lined, a minimum 10 ft. above incinerator, balance terra cotta, or approved equal, lining.

Fuel Type 3 requires auxiliary burner in primary and fume burning chambers. Positive draft control, not to exceed .03" W.C., shall be provided. Fly ash control shall be such that no emissions will be made in excess of .85 lb. per 1,000 lb. of flue gas. Spark arrestors shall be provided at top of chimney, ½ in. mesh, height above cap equal to maximum cross-sectional dimension.

Section 00.02 Commercial, Industrial, Municipal, and Special Fuel-Burning Units.—All installations hereafter erected, shall be equipped with incinerators, Class III through VIII, designed for the principal waste to be destroyed. They shall be of heavy duty construction, and shall include primary combustion chamber designed for maximum 30,000 Btu per cubic foot, secondary combustion chamber to maintain 1,400°F., and final combustion and settling chamber wherein combustion gases shall not exceed 9 ft. per second.

Material charging may be direct side, end, or top charge chutes not larger than half the height of the incinerator. Refractory linings laid in fireclay or high temperature cement, not less than 4½ in. thick up to 9 sq. ft. of burning area, 9 in. thick over 9 sq. ft., and 13½ in. thick on all walls over 9 ft. high.

Exterior walls 8 in. common masonry with minimum 2 in. air space between lining and exterior walls, or in lieu of masonry, a steel case with 4½ in. insulation. All Class III through VIII incinerators shall have exterior structural steel framework, designed to withstand interior thrusts and support door and appurtenant assemblies.

Type 1 fuel to be burned on cast iron grates, stationary, dump, or combination thereof, mechanically or manually operated, with air openings not to exceed 40 per cent of total burning area. Type 2 fuel to be burned on hot drying hearths, with fuel grate area not to exceed 25 per cent of total burning area. Type 3 fuel to be burned on combination hot refractory drying hearth and cast iron grate area, each approximately 50 per cent of total burning area.

Type 4 fuel to be burned on hot refractory hearth area over the total burning area. Type 5 fuel may be applied to standard type heavy duty incinerators with safety and automatic controls for firing. Type 6 fuel to be burned on hot or cold refractory hearth or crucible, with direct charging to burning area.

All types of fuel shall be burned without producing smoke in greater density than Ringelmann's No. 2 for more than five minutes in any hour, and shall not emit fly ash to exceed .85 lb. per 1,000 lb. of flue gas. Units up to maximum of 24 sq. ft. total burning area may be manually operated and controlled, provided the user has an operator in attendance sufficient time during operation to guarantee functioning within code limits.

Over 24 sq. ft. total burning area, automatic control of auxiliary fuel equipment by pyrometer or other mechanical means, as well as smoke indicating and alarm device must be provided. Breechings must be of high temperature construction with steel exterior lined with firebrick. Natural draft stacks must be high temperature construction to produce a minimum .03 in. draft and maximum velocity of 55 fps.

Incinerators may be connected to existing stacks capable of handling added load, or in new stacks designed to handle combined equipment. Wet precipitant combustion gas washer systems with mechanical draft may be used where not less than minimum .03 in. draft is supplied and operation is within the limits of this code. All incinerator equipment must be submitted for approval and permit, and must be accompanied by supporting engineering information and analysis.

When William E. Tidmore, Director of the Smoke Abatement Bureau of Atlanta, a Director of our Association, saw the proposed code, he wrote Mr. Smauder as follows:

"The three steps taken in analysis of fuel, classification of incinerators, and regulations that should result in satisfactory operation are certainly steps in the right direction. Only time can tell whether we are still in the crawling stage or just now beginning to walk in an upright position in the path of progress.

"In reference to requirements in the proposed code Section 00.00, here in Atlanta, more than 95 per cent of the new residences are heated with natural gas, and about 75 per cent of them do not have masonry chimneys. Type 'B' gas vents were used where no chimneys are built. We also have a good garbage and refuse collection system that eliminates the necessity for incinerators other than municipal incinerators.

"A sanitary tax is paid on all occupied residential, commercial, and industrial property, which helps to provide refuse collection services. Also in a rather large percentage of the new residents garbage disposal units are connected to the kitchen sinks, grind it up and dispose of it through the sewer system.

"It is suggested that at least the minimum requirements of the National Board of Fire Underwriters and other similar agencies be complied with in every proposed section, and then each local code's requirements be met if their requirements are greater than N.B.F. We find fly ash collectors and auxiliary fuel are necessary on most incinerators in order to make them acceptable in most neighborhoods."

Thoughtful comments like these are always welcome. Anyone wishing to express an opinion on the proposed Code may do so by writing to Ellis E. Smauder, President, American Incinerator Corporation, Detroit, Mich.

The Incinerator Institute

In June, 1950, the Incinerator Institute of America was formed to make it possible for the incinerator industry to satisfy more effectively the growing need for the sanitary disposal of garbage and waste in residences, apartment houses, hospitals, hotels, schools, department stores, factories, and municipalities. Its products are urgently needed, and the industry must supply the best it knows how to make.

The organizational structure of the Institute provides for inclusion of the entire industry on the following divisional basis: (1) residential, (2) commercial and industrial, and (3) municipal.

The Institute will work with states on the elimination of stream pollution and unsanitary disposal of garbage and help municipalities in the writing of ordinances and regulations. It will also cooperate with the Air Pollution and Smoke Prevention Association of America in its program.

Plans are being made to furnish information on the products of the incinerator industry to architects, builders, regulatory bodies, municipalities, and the public.

Within the industry, the function of the Institute includes the collection and dissemination of statistics, the adoption of standard nomenclature where feasible, coordination of advertising and publicity programs of members, and the general promotion and protection of the interests of the industry.

The reason for the need of an incinerator association were given by Ellis Smauder to the Executive Office. He said:

"The trade association, as an organization, is perhaps one of the most difficult to define and classify. Since it is a nonprofit organization whose functions fall generally within the field of public relations, its purposes and its value to its own industry and to the overall economy are not always readily comprehended."

He then listed the primary functions of an industry trade association:

1. To furnish a medium of contact and discussion among the members of the industry;
2. To act as a center of information on the industry and on all matters affecting it;
3. To be an instrument for protecting and advancing the legitimate interests of the industry;
4. To act as a public relations agency of the industry;
5. To serve the industry as its vehicle of expression on industry policies;
6. To be its contact with government, the press, and the public.

"When a representative and strong trade group has been formed," Mr. Smauder concluded, "its existence is all too frequently taken for granted and little thought, if any, is given to the comparative condition of the industry before such an organization came into being. Because the trade association must largely concern itself with the less tangible requirements of a properly functioning economic structure, its greatest values have not always been adequately appraised.

"An industry trade association can, and normally does, represent the difference between destructive competition and a well-ordered and enlightened industry operation in the public interest. Since it is a neutral body, an association can through sound policies earn the confidence of both the public and the industry, and is best able to serve the interests of both by achieving results more economically than companies working individually toward the same end."

NEXT ISSUE

When your Executive Secretary visited Cincinnati recently, he was so impressed with the excellently managed Smoke Inspection Department that he asked Charles W. Gruber, Chief Smoke Inspector, to describe it in a forthcoming issue of AIR REPAIR. Mr. Gruber consented, and his article will appear in the January issue.

Three other very interesting articles will be featured. John L. Hodges, President of AP&SPAA, is currently wrestling with problems concerning odors and the difficulty of legislating against them. He will give us the benefit of his thinking on the matter.

W. C. L. Hemeon, Director of Engineering of the Industrial Hygiene Foundation, has promised to write an article on some of the problems he is currently concerned with, and Marc G. Bluth, Executive Secretary of the Stoker Manufacturers' Association, will report on the latest developments in the field of stokers.

If possible, we may have an article on the control of noise as an air pollutant. E. C. Luster, Chief Inspector of Miami's Department of Public Service, is giving the matter a great deal of thought.

American Cyanamid Fights Pollution

Extensive Program Under Way at Bridgeville

Because many manufacturing processes tend to contaminate the natural resources surrounding their location, the Bridgeville, Pa., plant of the American Cyanamid Company has carried on a long-range, specific program aimed at both the reduction and the elimination of pollution in the land, the air, and the water.

Members of the Air Pollution & Smoke Prevention Association of America will be particularly interested in the steps that are being taken to clean the air at Bridgeville, but because the pollution program is so comprehensive, a short description of the entire endeavor is hereby given.

Fighting Air Pollution

Fumes and dust are the twin bogey men of most chemical plants. They form health hazards, and therefore their elimination is a matter of most immediate concern.

The Bridgeville plant has a well-equipped medical department with a full-time doctor and two nurses. This group plays an important role in the industrial hygiene program. Periodic examinations of all employees are carried out. An industrial hygiene engineer constantly studies plant processes and spots the places where harmful vapor concentrations or dust conditions may develop. A month rarely goes by without the addition of some new installation to prevent such health hazards.

Fortunately, few of the processes at the Bridgeville plant are inherently toxic. Most of the toxic vapor concentrations result from solvents used in the various processes. These lend themselves to ready correction through local ventilation and enclosure of reaction vessels and tanks. Before the new projects are approved, designs of new equipment are scrutinized by the industrial hygienist to make sure that no health hazard will result.

Fume and Dust Problems

The most serious problem, from a practical point of view, is the irritating organic vapors resulting from the phthalic anhydride process. These are non-toxic, but as they contain a trace amount of lachrymator, they provide, at times, a source of annoyance to the employees.

The phthalic anhydride operation is the largest one at Bridgeville. Due to the type of equipment and the scattered nature of this operation, the cost of eliminating this condition would be prohibitive. Hence, efforts have been directed toward minimizing the effect of such fumes through dispersion by means of improved gas scrubbing tall stacks and steam ejectors.

The inability to eliminate this condition on existing equipment has been one of the reasons for designing a complete new phthalic anhydride plant. Construction is at present under way. Incorporated in the design is a means of catalytic oxidation of these vapors to carbon dioxide and water. In time, the existing process can be abandoned and this source of nuisance eliminated.

Dust which arises from the crushing, filtering, and packaging operations requires as much attention as the fume problem. Automatic equipment, complete enclosure, and forced draft ventilation leading to dust collections are the usual remedies in cases of this kind.

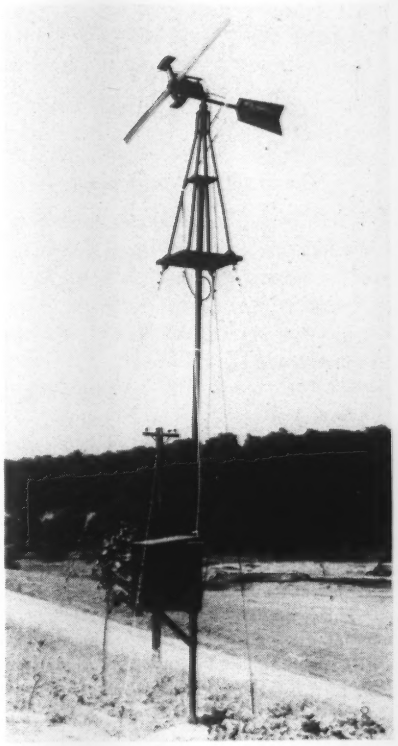
Several industrial vacuum cleaners have been purchased for use inside operating buildings to maintain healthy and dust-free conditions. Cleaning with these vacuum cleaners is carried out on a regular 'round-the-clock schedule.

A street sweeper similar to those used on city streets is employed to reduce road dust. In addition, plant roads are hosed as often as required. Roofs are policed at frequent intervals. Products which may accumulate on roofs around exhaust vents are cleaned up. As rapidly as possible, such vents are being redesigned to include entrainment scrubbers.

The Bridgeville plant has cooperated closely with the Allegheny County Bureau of Smoke Control. All gas-fired vessels are adequately vented and licensed under that authority.

Dust Collection and Waste Disposal

Mechanical dust collection of the multiple small tube cyclonic separator type has been installed on the pulverized coal-fired boilers. A 200-ft. chimney was removed and replaced by two stub stacks equipped for induced draft operation. These changes permitted operation at high loadings with stack gases testing well within required collection performance.



One of the windmill air samplers used by the American Cyanamid Company at Bridgeville, Pa. The 20-ft. high structure creates the power to run a suction device which draws air through the sampling apparatus. Technicians can determine, in a matter of minutes, the fractional percentage of sulfur dioxide and maleic acid, two major irritants, present in the atmosphere around the plant.

A large storage silo was recently installed, together with dustless unloading equipment, thus virtually eliminating the dust problem at the ash unloader.

Adequate disposal of plant wastes is a major problem, especially at a plant like Bridgeville, where several hundred different items are manufactured. Disposal must be provided for the samples, filter drainings, off-grade batches, of each of these. In additon, miscellaneous raw materials and product samples in glass, tin, and paper containers require disposal.

Because of the flammable nature of most of these materials, burning is the

only satisfactory method of disposal. The Bridgeville plant is gratified to announce that an incinerator is being designed to eliminate this last remaining source of real contamination to the area.

Windmill Air Samplers

A new type of air sampler, known as a windmill air sampler, was installed recently. Through it the effectiveness of all the varied measures taken to minimize air pollution can be gauged. Two of them have been installed thus far, and were viewed with interest by a distinguished group of visitors, most of whom are nationally known in the field of industrial hygiene and most of whom are members of our Association as well.

They were brought to Bridgeville by William R. Bradley, Chief Industrial Hygienist of American Cyanamid's New York office, and included Dr. L. V. Cralley and T. Bonney, of the Aluminum Company of America;; E. C. Barnes, of the Westinghouse Electric Corporation; C. W. Daubert and A. D. Muldoon, of the Allegheny County Bureau of Smoke Control; J. Flannagan, U. S. Bureau of Public Health, Washington; Dr. H. H. Schrenk, Director of Research, Industrial Hygiene Foundation; Dr. C. Engel, Pennsylvania Department of Health; J. S. Sharrah, Division of Air Pollution Control, Bureau of Industrial Hygiene, Department of Health, Harrisburg, Pa.; Dr. Joseph Shilen, also of Pennsylvania's Bureau of Industrial Hygiene, Harrisburg; J. P. Strange, Mine Safety Appliances Company; W. J Wisswesser, Wilson Products Company, Reading, Pa.; and C. D. Yaffe, U. S. Public Health Service, Cincinnati.

Of the two samplers, one is located to the windward side, the other to the leeward side of the prevailing wind. By means of aspiration, samples of the air entering and leaving the plant are obtained. The analyses of these samples and the correlation of the data obtained are under constant surveillance by the laboratory and the industrial hygienist.

Samples of incoming and outgoing air are being analyzed for sulfur dioxide, maleic anhydride, and air-borne particulate matter. Work is under way to develop accurate methods of analysis for low concentrations of other gases and vapors which are vented from manufacturing operations. As an adjunct to this program, a small portable air analyzer is used to spot-test specific locations within the plant proper. In this way, data can be correlated on the variation in concentration with changes in operating and atmospheric conditions.

Keeping Water Clean

Each month about 50,000,000 gallons of water are used by the Bridgeville plant. This is sufficient for a town of approximately 25,000 people. Some of the water is used for plant cooling purposes and the generation of steam. Since much of this water can be kept free from impurities it is recirculated through cooling towers and used over and over again.

The balance of the water is used for process purposes. The great majority is used to dissolve or collect impurities. As can be gathered, water is used widely for scrubbing impurities out of air. It also is used extensively in the various processes to remove by-products or impurities.

Early in 1947 a program was inaugurated to study a satisfactory method of treating these effluents. A lengthy research project was required. The treatment had to be sufficiently versatile to handle widely varying concentrations of different types of effluents together with the usual sanitary sewer wastes.

After two years of comprehensive studies and extensive pilot plant operation, it was shown that with careful control these effluents could be neutralized and treated successfully in a biological filter. On the completion of this work a contract was drawn up for treatment of plant wastes with the Allegheny County Sanitary Authority.

In recent months, engineering design of sewers and preliminary treatment facilities have been drawn up to provide connections to the Allegheny County interceptor sewer. These plans have been submitted to the Pennsylvania State Sanitary Water Board for approval. Once these projects have been installed, the vast quantity of water used each month by the Bridgeville plant will return to the land in the same pure state it enters the plant.

"American Cyanamid," stated H. A. Van Brocklin, Plant Manager, "hopes that industrial hygiene programs such as that being carried on at Bridgeville will not only benefit the employees and the community, but will contribute valuable information to the science of pollution control."

British Magazine Notes 100 Years' War Against Smoke

Back in 1849 William Flockton, surveyor of Sheffield, England, had a grand idea. He proposed that the chimneys of every house should be connected with a down current shaft, which in turn would connect with a flue running under the street.

These flues, also in communication with the sewers, "would gradually converge to one large and lofty tower or chimney. In the lower part of the tower a fire was to be kindled, and in this way all the smoke, sewer gases, etc., drawn out of all the ramifications of this network of sewers and flues, and in their passage through the fire to be consumed and rendered innocuous."

The fire would, it was thought, be self-supporting, and would produce a "flame of such magnitude and brilliancy as to assist materially in lighting the district by night."

This is just one of the gay little stories told in the summer issue of *Smokeless Air*, the official publication of the National Smoke Abatement Society, the venerable British counterpart of our own Association. In an article entitled "A Hundred Years of Smoke Prevention" a number of interesting moves toward cleaner cities have been chronicled.

However, in an article on another page, entitled "Parliament Discusses the Smoke Problem," Anthony Greenwood, Member from Rossendale, mentions the fact that it is now 645 years since Parliament first concerned itself with the nuisance caused by smoke. He refers, of course, to the fact that King Edward I instructed his commission in 1306 to "assess great fines and ransoms" for those who ignored his pioneering anti-smoke ordinance.

Smokeless Air, now 21 years old, is a quarterly like AIR REPAIR, and is issued gratis to members of the National Smoke Abatement Society. While it is the official organ of the Society, the views ex-

pressed in contributed articles are not necessarily endorsed by the Society. In other words, it tries to cover smoke abatement news and is impartial enough to give all sides to a question. Truly a worthwhile publication to support!

And you don't have to be a member to do so. Send a dollar to the National Smoke Abatement Society at Chandos House, Buckingham Gate, Westminster, S.W. 1, London, and you will be put on the mailing list for a year.

Just to give you some idea of the other subjects in the current quarterly: there is an article on the circular issued by the Ministry of Health on fuel appliances in privately built houses; another on the problem of colliery spoilbanks (British for gob piles); another on the progress made on railway electrification; and still another on the value of having a national fuel policy.

The 5½ x 8½ in. magazine is liberally supplied with interesting photographs. It also accepts certain advertising matter, including descriptions of hot water boilers, dust collectors, smokeless coal, retort heated appliances.

AP&SPAA Quoted

A new bulletin entitled "Climatic and Environmental Criteria for Aircraft Design" is being published by the Army-Navy Committee of the Munitions Board. It will be distributed by the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

In it, according to Lieut. Col. Ray Ward Taylor, Public Information Officer of the Air Materiel Command, Dayton, Ohio, the following papers from the Smoke Prevention Association Proceedings will be referred to:

1. "Meteorological Factors Affecting Smoke Pollution," by R. D. Fletcher and Ed. Smith. 1944.
2. "Meteorology and Smoke Abatement," by R. D. Fletcher. 1945.
3. "The Importance of Meteorological Elements in Spreading Smoke," by R. D. Fletcher and N. E. Manos. 1948.

More Diesels Ordered

The New York Central Railroad has ordered 261 diesel-electric locomotives at a cost of $35,000,000. The new units will include 237 locomotives for service on the New York Central itself and 24 for the Pittsburgh and Lake Erie, an affiliate.

The order will consist of 64 road freight units, two passenger units, and 148 yard and 47 road switchers. Delivery is scheduled for early 1953 and will boost the New York Central's diesel ownership to 1,915 units with a total horsepower of 2,446,100.

Smog Sickens 500

A choking, chemical smog, the second in six days, made about 500 persons ill and caused 30 others to require first aid in Elizabeth, N. J., on September 19.

Health Officer George E. Laubach stated that the smog "apparently contained sulphur from industrial smoke." It affected workers in the Phelps-Dodge copper products plant and the Teletone radio factory in the Bayway industrial area.

They complained of nausea, chest constriction, nose and throat irritation, and smarting of the eyes. One worker described the fumes as "just like tear gas."

Deny Laxity

Officials of several Union County, N. J., municipalities recently disputed the charges of William G. Christy, New York City's Director of Smoke Control, that they were doing "practically nothing" toward smoke abatement.

Complaints of smoke nuisance in Elizabeth are handled by the Board of Health, and a spokesman said action was taken where warranted. He cited the case of the Mundet Cork Corporation, in Hillside, which has been the subject of smoke complaints for many years. This company was fined $100 last year for violating a local smoke ordinance.

As a result of action by the township committee, the Mundet Company also spent thousands of dollars in installing equipment to eliminate odors and to prevent particles from polluting the air.

Bill Stricken

Illinois State Senate Bill No. 306, which provided for the creation of a commission to study the problems of water pollution in Illinois, prescribing its powers and duties and making an appropriation therefor, contained an amendment which sought to insert the words "atmospheric pollution" into the bill.

Before adjournment, both the bill and the amendment were stricken from the Senate calendar, which disposes of the matter, at least until the next General Assembly.

Commissioner Wanted

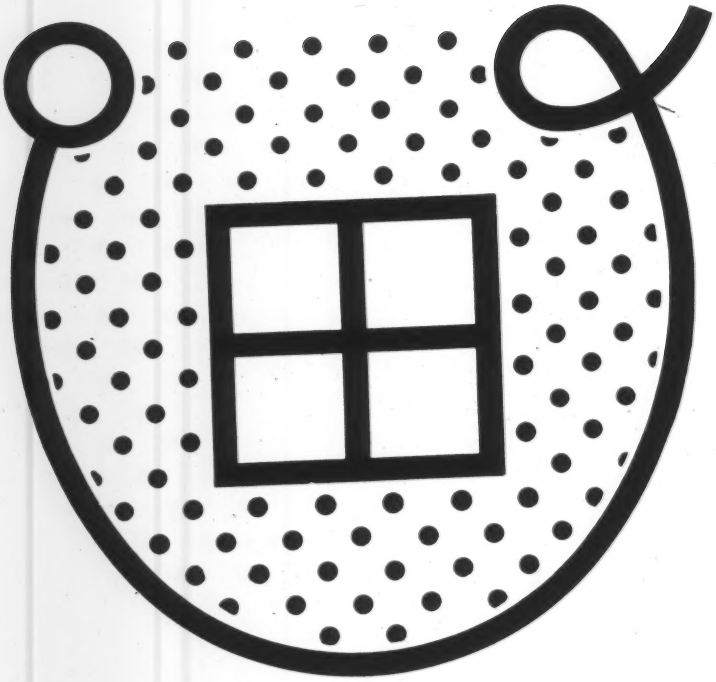
The city of Waterloo, Iowa, is interested in engaging the services of a properly qualified specialist to administer the air pollution abatement ordinance which was passed last year.

In a letter to AIR REPAIR, Mayor Lawrence A. Touchae stated:

"We would appreciate very much much your making mention of our problem and our need for an Air Pollution Commissioner, and if any qualified persons get in touch with us we would be more than happy to communicate with them, to send them a copy of our ordinance, to discuss salaries and to give them any information which they might desire."

Anyone wishing further particulars may obtain them directly from Mayor Touchae.

New Haven Starts Survey

Industrial Hygiene Foundation has just been requested to make a study of atmospheric conditions in the City of New Haven, Connecticut, for the purpose of defining the air pollution problem so that the proper type of anti-pollution ordinance may be passed.

The survey is being undertaken this month under the direction of W. C. L. Hemeon, Director of Engineering, who will be assisted by members of the City's Health Department. Mr. Hemeon estimates that the survey will take about a year to complete.